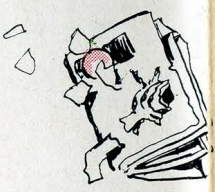
P.S
THE PREVENTIVE MAINTENANCE MONTHLY
COMMANDING OFFICER
DAY ROOM'S PS SHOULD BE IN, BUT ISN'T.
Will Eisner

PS MAGAZINE IS NO LILY



PS is a magazine that's got to be man handled.
But a lot of people don't seem to know it.
Take the gentleman on the front cover.
He will remember his crime every time he suffers to sit.
What crime?
Well, he says he put the outfit's copies of PS in the technical library instead of out where them as needs it can get it.
Let it not happen to you.

Big or little, (even brass)
Why have teeth marks
— — — — — — — — — (big prize for best last line).

At any rate, Gentlemen, let's get one thing straight.
PS Magazine is for users.
U-S-E-R-S
Users are people who Operate, Service, and Fix the equipment.
Users are people who visit the day room one-hundred-thousand times before they set foot or finger in anything that looks like a library.
And PS belongs to Users.
So get PS outa that desk drawer and onto the table
where they can get a crack at it and it'll do somebody some good.
Give them something to chew on
besides your curly tail.

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three on the M38

A trio of holes . . .
one to drill for fuel-pump pressure
one to plug in the bell housing
one to help steady your horn rod

The first hole will take care of high pressure troubles in fuel-pumps (Manufacturer's Part Nos. 800350 and 800362) that you'll find in M38's up to Serial No. MC 53262. You add a ⅛" hole and subtract a seal.

It seems that the fuel diaphragm's upward movement is pulling oil past the oil-seal in these pumps, leaving a reservoir around the base of the spring with no place to go. This interferes with the diaphragm's downward movement so that you have high pressure when you don't want it. Originally the idea was to keep oil away from the spring and the under-part of the diaphragm—but since the stuff gets through anyway, a free flow of oil in that area is your best out.

To solve the problem, first get rid of the oil seal. Take out the diaphragm, pull-rod, spring, oil-seal retainer, and oil seal, and put back the retainer without the seal. Then drill a ⅛" oil-return hole in the deck of the body (Fig. 1). **This double-deal allows oil to be freely drawn up around the spring and flow back through the hole.** Now put back the diaphragm and pull-rod assembly (use a new diaphragm, Part No. G470-7375384 if the old one's twisted or wrinkled) and replace the pump cover, tightening the screws while the diaphragm is held down tight.

The later models and those in the M38A1 come with the seal out and the hole in.

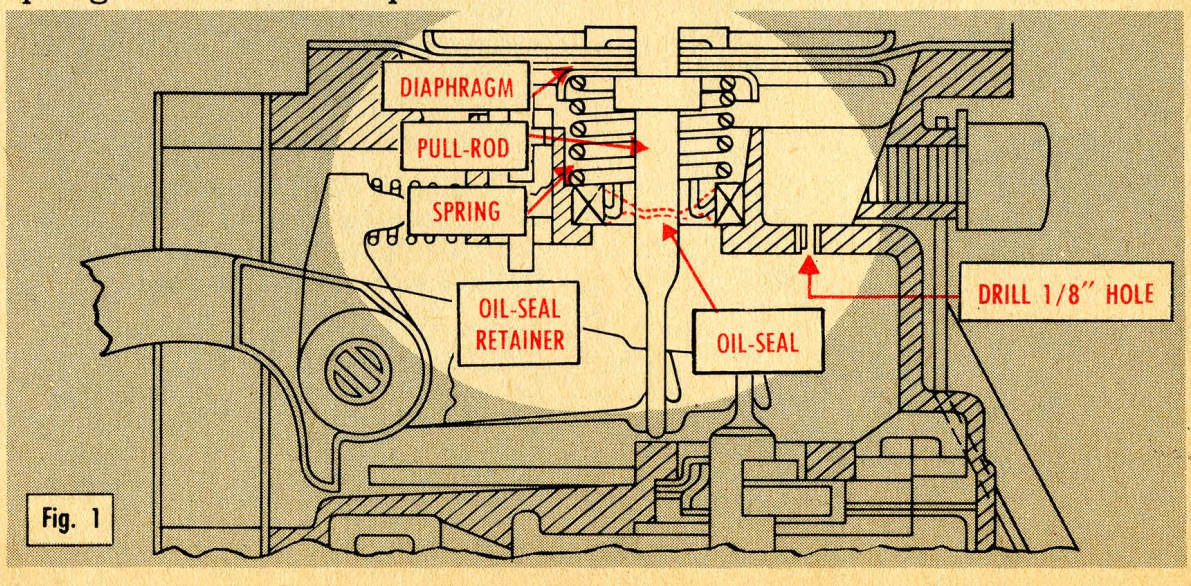


Fig. 1

BELL-HOUSING COVER PLATE

The second hole is one that was built for the M38 ¼-ton's bell-housing drain-plug. This plug is SOP for most of the new wheeled vehicles but for others, there is no plug—which means the bell-housing is left with a hole that's open all the time. This hole lets a lot of mud into the system (especially while you're fording). Mud hits the flywheel like something hitting a fan, and flies all over the place—to the clutch pressure-plate, clutch-driven disc, rear main-bearing, bearing oil-seal, etc.—doing plenty of damage all along the way.

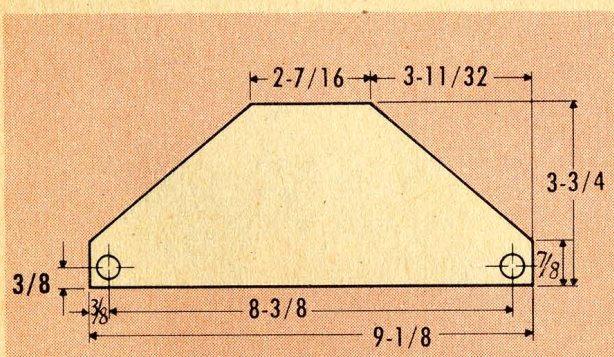
Your best bet is to cover that hole without sealing it. This keeps the mud out, and at the same time lets in atmospheric pressure when you're not fording. MWO Ord G740-W4 says for the M38 (Serial Numbers 10001 through 51887 and 51989 through 53261), you can do it by making a cover plate (Fig. 2). Use a piece of 16-gage steel (Stock No. 47-S-2667-40 if you need to requisition it).

To install the plate, take the two nuts and washers off the bolts at the bottom of the engine rear-plate and clean the plate. Then set the cover flush against the rear plate onto the two bolts, put back the washers and nuts—and that's it.

FIRST TRY DOES IT

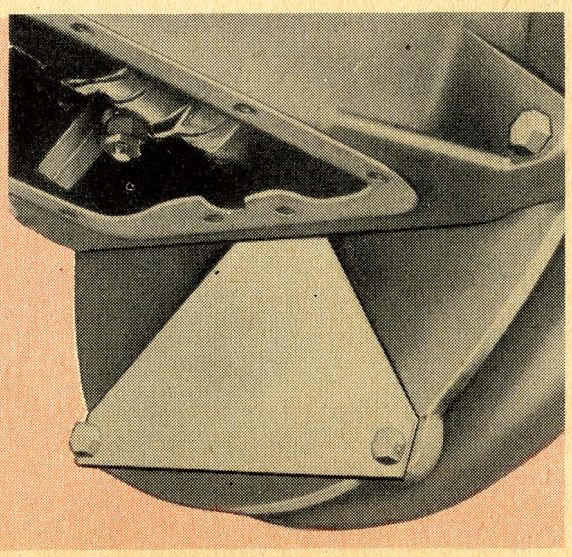
It's funny-peculiar how long it can take to get an M38 horn-rod in the hole at the horn-well's bottom. The 42″ rod droops and rests on the well-wall and getting it into the center hole can often take over an hour.

But with a 9/16″ diameter, stiff leather or fiber disc placed about 4″ from the rod's end there's nothing to it. Punch a hole slightly smaller than the rod's 1/8″ diameter in the disc's exact center and cut a strip out of its radius to give it spring tension around the rod. A washer with the same dimensions will also center the rod in the horn-well and put it right where it belongs.

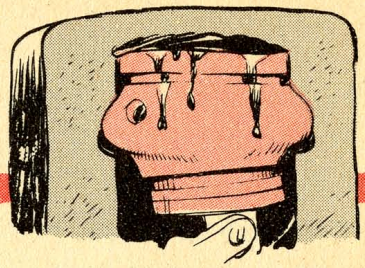


NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES

Fig. 2



PLUG that PUMP!



PS #10 tipped you off that primer pumps were to be deleted from future production vehicles and slated for issue in kit form as winterization equipment only. The pumps are for cold, cold weather operation (temperature –10° F. and below) and on this subject there are no if's, but's or maybe's. To prove the point, you are now to plug the primer pumps on vehicles that have them and are operating in temperatures above –10° F.

The MWO's that cover this change are: G740-W2 (¼-ton), G741-W1 (¾-ton), G742-W6 and G749-W2 (2½-ton), and G744-W2 (5-ton trucks). To deactivate the pumps you need Cap Seal, Stock No. G740-8330929 (Fig. 1), which is listed as Manufacturer's Part No. WH-210-06953 in the MWO's.

Here's how it's done: Seat the seals in the lines at the points shown in the figures, reassemble as before, and gas will flow through the primer no more.

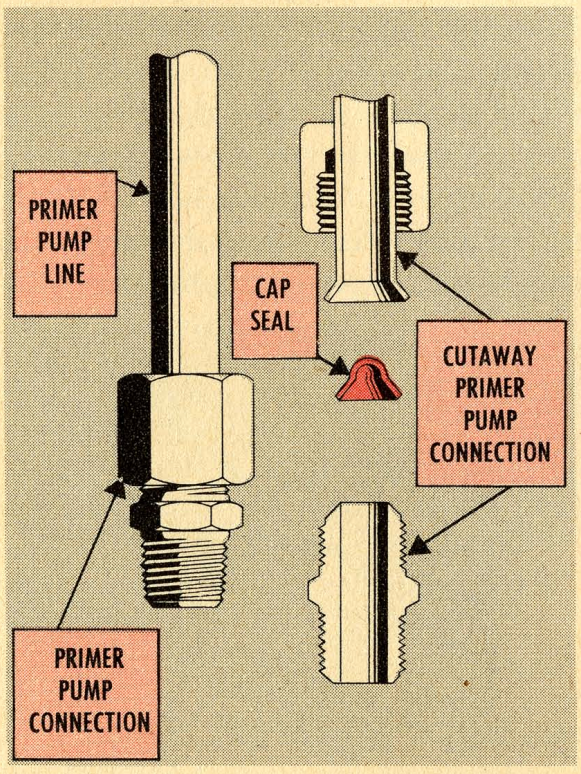
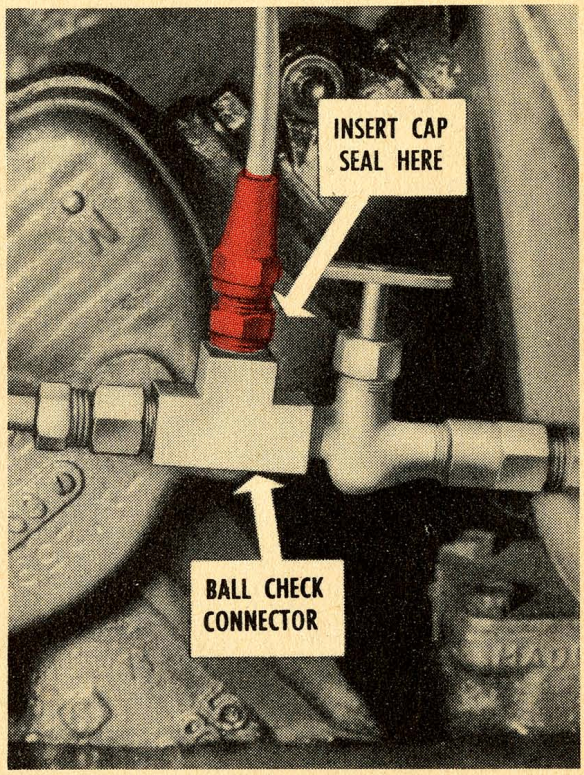
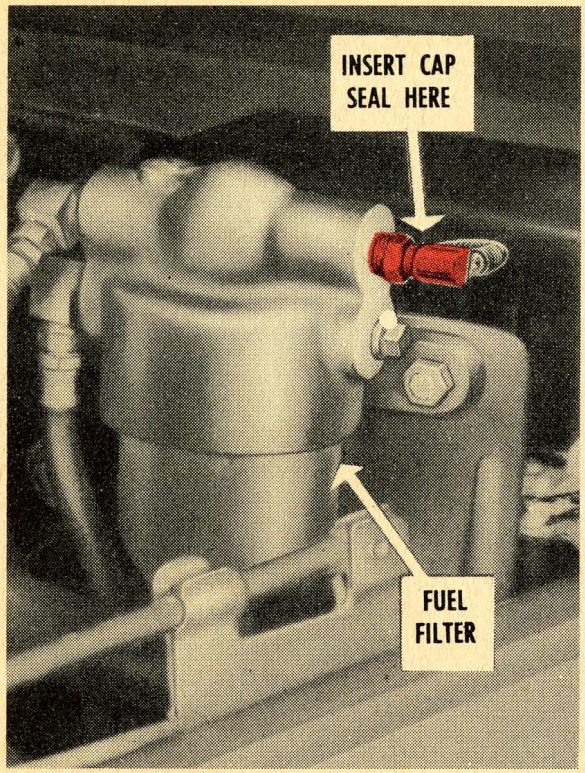


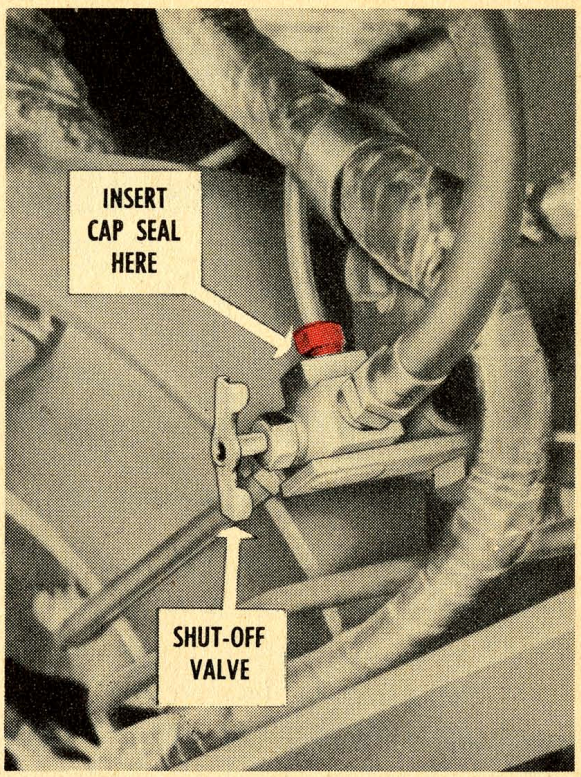
Fig. 1—To plug up the primer pump in your truck, put this cap seal in the pump line.



¼-ton—The cap seal goes in primer-pump-to-ball-check-connector line at the connector.

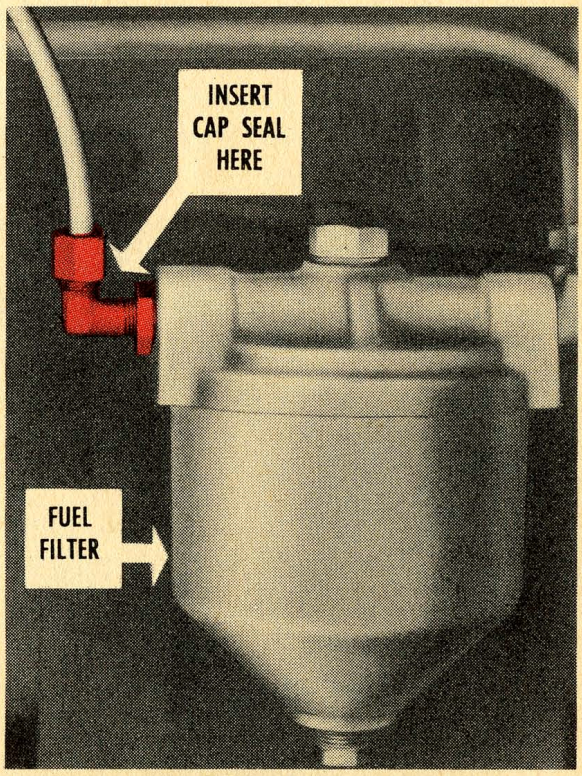


¾-ton—Put the cap seal in the primer-pump lower-inlet line where it meets the fuel filter.



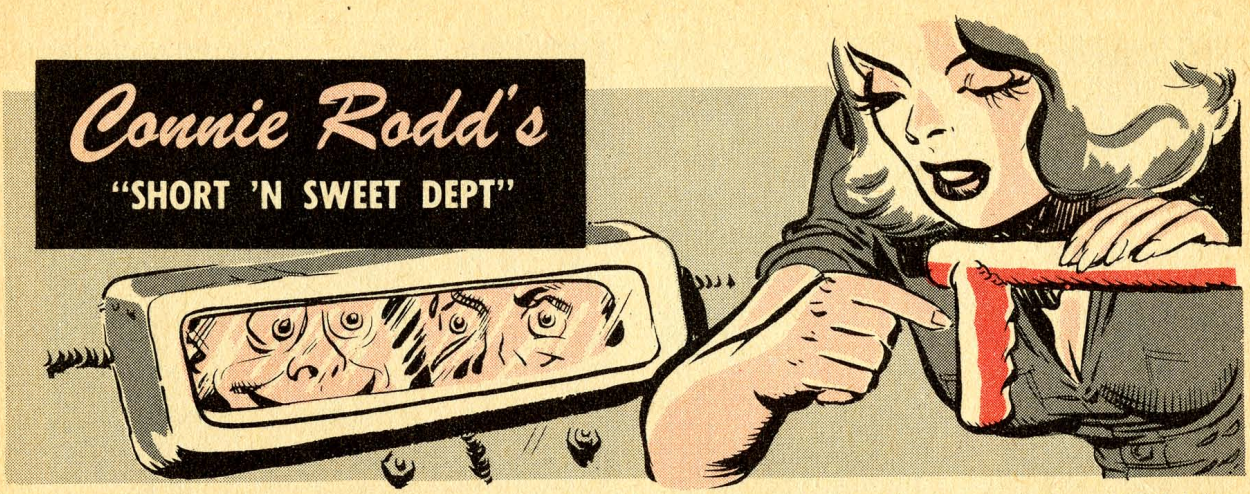
2½-ton (Reo or Studebaker)—The cap goes in primer-pump inlet-line at the shut-off valve.

2½-ton (GMC)—The cap seal is set in the primer-pump rear-line at the fuel-tank-line tee.



5-ton—Plunk the cap in the primer-pump line at the fuel filter on the frame left-side-rail.

Connie Rodd's
"SHORT 'N SWEET DEPT"



Universal-joint care

Between the time its TM was prepared for publication and the first M38A1 came out of production, what to do about greasing the universal joint was changed. That's why TM 9-804A, page 44, shows a hydraulic fitting at this spot and says it should be lubed regularly, while LO 9-804A (6 Sept 52) says to remove the plug, and lube the joint every 1000 miles (either with a temporary fitting or just with the lube-gun spout). This is not right, and the LO has been corrected.

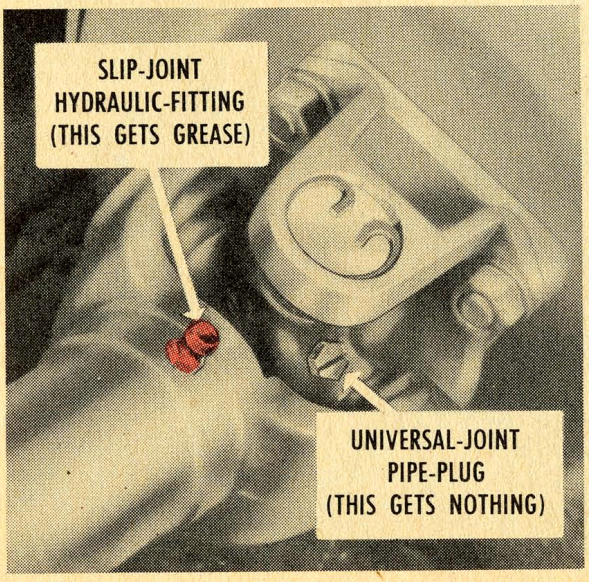


Fig. 1—The M38A1's universal joint has a not-to-be-removed plug, and no hydraulic fitting.

The universal joint on the M38A1 has a pipe-plug that's in to stay except during rebuilds (Fig. 1). Instead of the fitting, these joints have a double-lip seal that should keep the lube in place forevermore. Should yours be leaking, it may have been lubed, over-pressured, and probably needs a new seal.

Using a pressure grease-gun forces the seal out of position and unseals it. So leave the joint plugged, and leave it alone.

All of which doesn't apply to the universal-joint slip-joint of course. That's got a hydraulic fitting and should be lubed every 1000 miles.

Capping the oil gusher

Connie wants to call your attention to a change to TM 9-819 on your M47 and M59 2½-ton dump trucks, that ought to be digested like a good steak.

When you have your vehicle on level ground to check the level of your hydraulic fluid, there's a couple of "Before Operations" to make **before** you even touch that filler plug. Believe you me, they'll save face and oil.

In the first place, you can't be sure if pressure has built up in the reserve tank—it happens when someone shoves

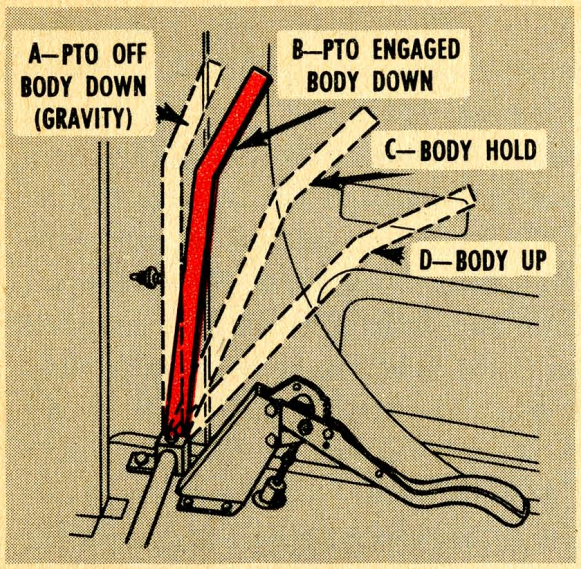


Fig. 2—Throw'er into (B) position and then operate the pump for at least a full minute.

the control lever to (A) position (Fig. 2) and lets the body slam down. If you don't get rid of this pressure, you'll think you brought in an oil well when you remove that filler plug. So do it this way:

First, raise and lower the body about two or three times. Next, shove the dump-body control-lever to (B) position (Fig. 2) and operate the pump for at least one minute to get rid of the pressure. **Then,** remove the filler plug and check the oil level.

Another thing to remember: The oil-level mark on the bayonet gage should be between the second and third mark from the bottom of the gage (like it says in Change 1 to TM 9-819) and not at the top mark (like it says in the basic TM).

Memory jogger

It's great to have the kind of memory that can recite TM references without benefit of indexes. But most folks don't —and their friends won't tell them. Why be half-safe?

Get yourself a pocket-sized notebook with alphabetical tabs and file your most-used maintenance-procedures in it. Then when you get in a fix for some facts, you've got the answer right in your own portable filing-system, along with the authority for it.

Under "A" you might have an axle fix, with the source listed as page so-and-so of PS Mag—under "B" a brake-adjustment procedure, showing the authority as TM such-and-such, and so on.

It's a great little aspirin-saver.

Wrench sets

OCT Peters at Fort Bragg has come up with the information that detachable spark-plug-wrench set (Stock No. 41-W-2995) has run into a snag. The 13/16″ socket (Stock No. 41-W-3325) is fine till you try to fit it over the spark plugs of the threaded-top waterproof type like in the "M" fleet vehicles. Then is when you are likely to have trouble.

These wrench sets and the individual wrenches are supplied by various manufacturers and you're likely to get a wrench made by any one of them—no choice in the matter. If you get wrenches that don't fit the new waterproof-type plugs, have heart—you can machine them to fit. There's a little ridge about 3/4″ down in the socket that you can file off about 1/16″ with a rat-tail file and all will be well.

This wrench set is under revision now but even when the new set is issued the old one will still be on an exhaust stock basis.

Bus Signboard

Post Motor Pool, Fort Sill, has a good idea for identifying the busses and trucks in which they transport classes and other units about the post. They paint a rectangle, approximately 18" x 24", on the side of the bus near the door with blackboard paint. This permits the instructor or person in charge of the detail to chalk his class number or other group designation on the side of the bus, and helps people spot the right bus from a line of waiting vehicles.

Shock-absorber spacer

It takes a ¼" spacer for each shock-absorber to soften the ride of your M101 2-wheel ¾-ton trailer. Without the spacer, the shock-absorber's upper-mounting-eye usually has too much end-play at the frame-mounting-stud—losing some of the shock's cushioning effect.

MWO G748-W1 (11 Dec 52) says that with two spacers, Stock No. G748-8330280, (one for each wheel) you've got it licked. Remove the upper end of the shocks and bushings and put the spacers on the studs, flat against the mounting frame. Then replace the shocks and bushings. And that's the end of the end-play.

Busted frames

Please, before you lift a heavy thing like the 2½-ton Reo or Studebaker, make sure you're hooked to the lifting shackles. People have been lifting these trucks by using the shackles in the rear bumperettes that are meant to be used for tie-downs and/or safety chains, and frames get busted during the operation. If you're following TM 9-819 (Jan 52) on the subject, you oughta draw bright red lines through paragraph 224 on page 255.

The rear lifting-shackles are part of the rear-spring U-bolt saddle. If you'll squat down and look, you'll find a removable pin in the saddle to help you get a sling in snug. The truck body is built to take the stress when you use these saddles.

And just so you won't be confused further . . . the official nomenclature for the tie-down eyes in the rear bumperettes **is** lifting shackle. This happens because the identical items on the front end of the truck **are** lifting shackles and are to be used as such. But when you're hooking up at the rear, bend down and find the removable pin in the rear-spring U-bolt-saddle—there's a good picture of them on page 203 (Fig. 115) of this same TM.

Is your wick oiled?

A batch of Auto-Lite distributor assemblies got into the supply system without first having their wicks oiled—the wick that lubes the distributor drive-shaft.

To catch the few that haven't been lubed, inspect the felt wick in any and all replacement distributors. If the wick is dry, saturate it in Preservative Oil, put a glob of GAA into the wick hole, reinstall the wick, and screw in the plug.

How's Your

Distributor Breaker-Arm?

People with all kinds of trouble can sometimes find the reason's a neglected, misbehaving breaker arm.

Been having breaker arm failures in your waterproof distributors? Contact points been burning and wearing along with that worn, rubbing block? Have you noticed point chatter and ignition miss at high speed?

Anyone of these troubles can be born by not having the right spring tension on your breaker arm. Spring tension should be 17-20 ounces to give you good performance and long life in your distributor. And you can get it.

Hook a tension gage (#41-G-105) on the breaker arm at the contact (Fig. 1) and pull on a line with the contacts. Take a reading just as the contacts open. If you're working with a Delco-Remy, you can adjust the tension by bending the breaker-arm spring slightly. If you're working on an Auto-Lite distributor, loosen the screw holding the breaker-arm spring and slide the spring in or out to give you the right tension. Tighten the screw, then check the pressure.

You've also got to keep the breaker cam lubricated—but not too much. Just a **trace** of general purpose grease on the lobes of the breaker cam will do the trick. You want the grease on the cam—not running off into the contacts.

If you've got the right spring tension and cam lubrication, it'll lessen the tension of the rubbing block against the cam and snuff out this trouble breeder.

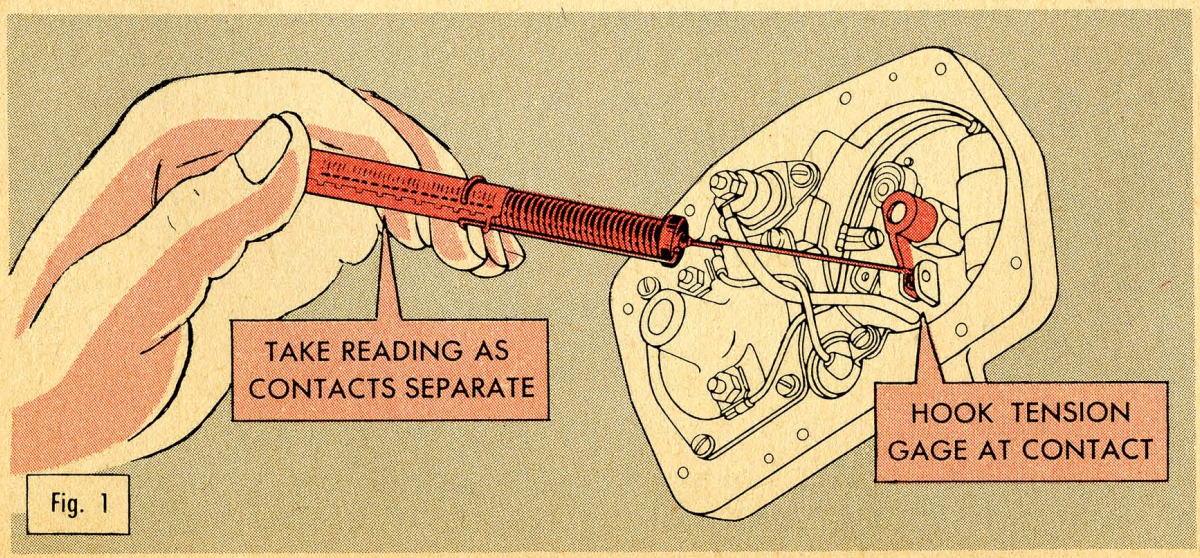


Fig. 1

QUICK CHECK

How to be sure your battery, generator, and cut-out relay are working like you want 'em.

As you know, checking the electrical systems of your new waterproof vehicles calls for all sorts of adapters and gismos, most of which you don't have when you need them. Here's a quickie that'll give you a fair idea of the state of affairs in your electrical system and requires only a voltmeter which will cover 30 volts.

Hook the voltmeter to your battery post—the one to which the starter-cable is attached—and to ground (frame or body metal), being sure to get the voltmeter's positive terminal on the positive side of the battery. Right away you should get a reading from 23 to 25 volts. This reading tells you that the voltmeter is connected right.

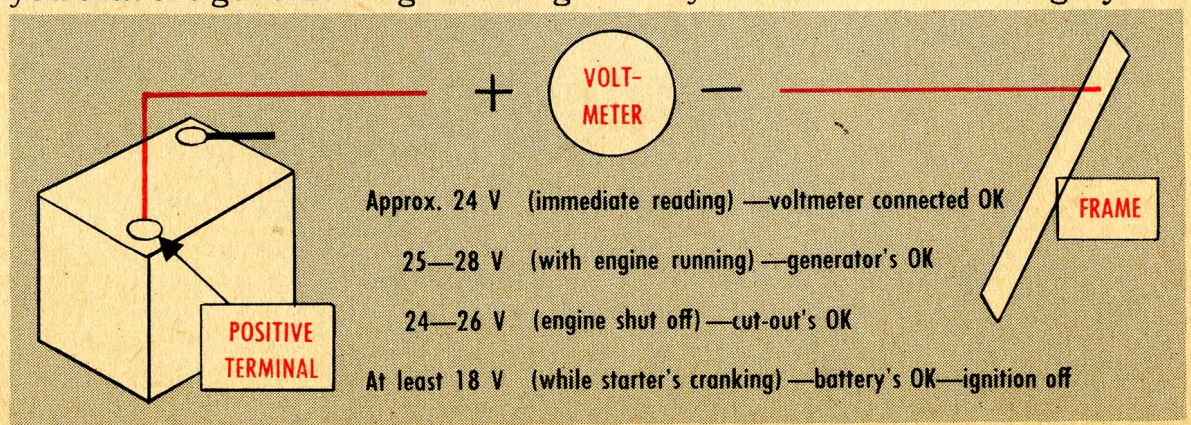
Now start your engine. Run it a little above idle (1000-rpm, more or less) and read your voltmeter again. You should have between 25 and 29 volts, and show a definite rise above the first figure. This tells you that the generator's generating.

Now shut off the engine. The voltage should drop off ½ to 1 volt from the reading obtained with the engine running.

With the switch off, turn the engine over with the starter. (**Caution:** Do not run the starter for more than 30 seconds.) You should have no less than 18 volts while the starter is cranking the engine—meaning your battery's strong enough to turn over the engine and fire the ignition.

That's all there is to it. You have seen that the battery is in reasonable shape, fit to crank the truck. You have found out that your generator is putting out and is charging the battery. And you have found out that the cut-out is opening when you shut down the engine.

If you get these readings at your battery, you are in pretty fair shape. If you do not get these readings, you better go looking for an electrical man who has the gadgets to test your truck out thoroughly.



BATTERY-CABLE SHORTS

One reason for low and dead batteries on the M46 & M46A1 tanks has been traced to the left battery-to-main-junction-box cable (the hot one). On all 46's and A1's this cable is sandwiched between the battery cover and the gas tank, which forces it into an awkward angle when hooked to the battery and main-junction box. In this twisted and strained position the cable eventually rubs through, letting naked wire touch the battery cover and you know what happens.

What a lot of people don't know is that it shouldn't happen. MWO Ord G244-W12 (21 July 52) stops the fireworks with directions to reroute the cable on all M46's & A1's in sight. It isn't much of a job and it doesn't take long.

Before you start, turn off the master-relay switch. Remove the battery cover (**Note:** Never remove the wing nuts on the hullside—if you do, the hooks will drop behind the gas tank).

Get yourself a sharp hack-saw and cut off 1¼″ from the 90° portion of the right front corner of the cover (Fig. 1).

Take off the battery (+) cable (marked 81) from the positive post and clean both the post and cable. On A1's the heater cable (marked 400) also connects to this same post; clean that one, too.

Wrap the cable or cables with friction tape, or better yet, slip a 12″ piece of rubber hose over them as a grommet. Reconnect the cable to the battery post so it'll pass over the right front corner of the battery. Now replace the cover; the hunk cut from the cover will let the cable feed toward the main junction box (Fig. 2) without rubbing against the left gas tank or the cover's edge. This'll eliminate short circuits and possible fires.

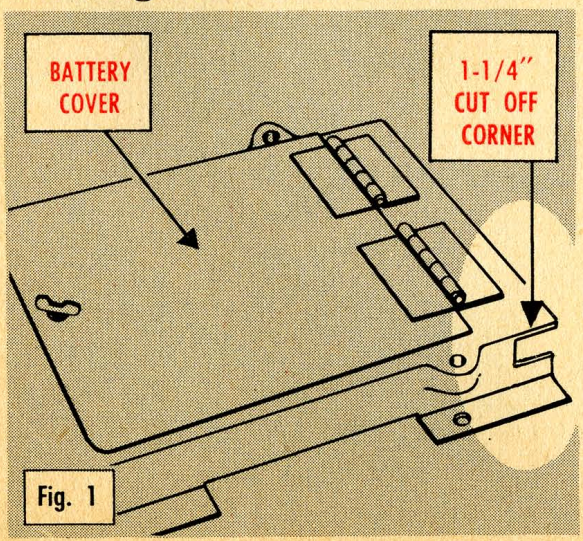


Fig. 1

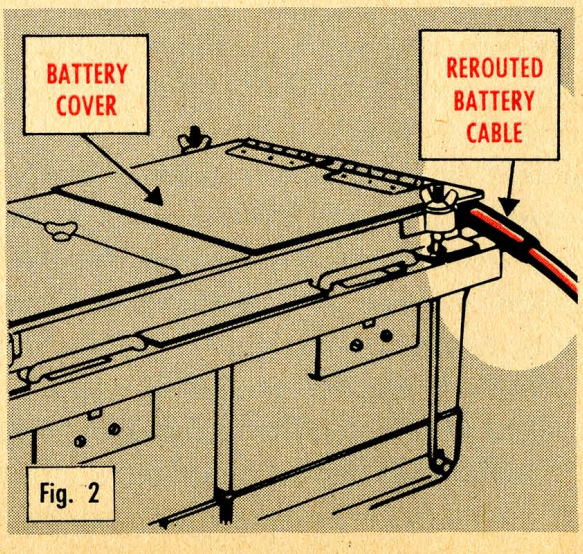


Fig. 2

Another kind of PM and another way to keep vehicles out of the shop—backing your truck, that is.

it's done with mirrors

The main reason so many drivers keep backing till they hear glass is that rear-vision mirrors are seldom set to do the driver the most good. This leads to high blood-pressure, statements of charges, and sometimes acrimony.

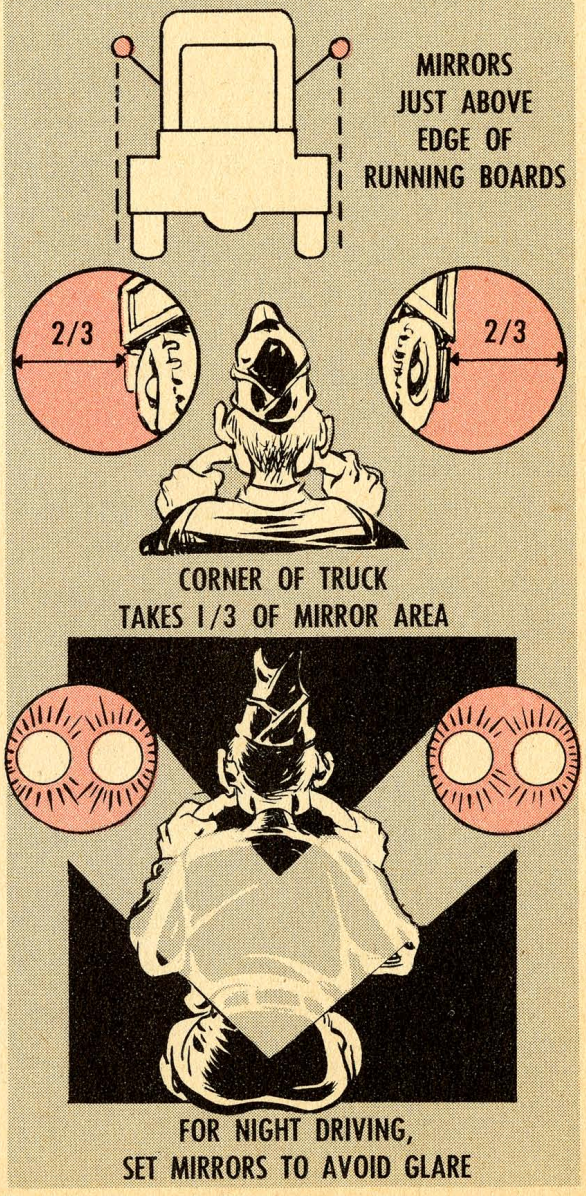
Mirrors can be set so they are a real help and you can back your vehicle safely even if the load prevents you seeing out the back window. Set the mirrors out till they are just above the edge of your running boards, wider if you are pulling a trailer, and adjust them so you can just see the rear corner of the bed or the trailer as the case may be.

If your truck has a right-hand mirror, be sure to set it too... that's where most guys fall down. Just how you set the right mirror is a matter of personal preference, some guys want to see their wheel-to-curb distance for easy parking, others prefer to have a better view of traffic behind them (including MP's and traffic cops). Any setting you like is OK as long as it lets you see that back corner of your rig.

After setting the mirrors to your satisfaction and locking them up, have someone walk right up the centerline of your vehicle from behind, stopping when you can just see him in both mirrors. He will then be standing at the point of the triangular blind spot which your mirrors do not cover. Go back and look at this blind spot, study its size so you'll have an idea of what you **can't** see behind you as well as what you can.

In fact, you'll do well to play around

25% of the accidents on one of our largest posts were caused by vehicles backing.



a bit with different mirror settings until you find the one that will do you the most good according to your needs. Everything about a vehicle is a compromise of one kind or another, and mirror settings are no exception. The wider they are out from the truck, the smaller your blind spot. But also the more danger of hitting something or being hit, and the more vibration. Again, the mirror that'll do you the most good while backing is not the same setting that will let you see overtaking cars for the longest time.

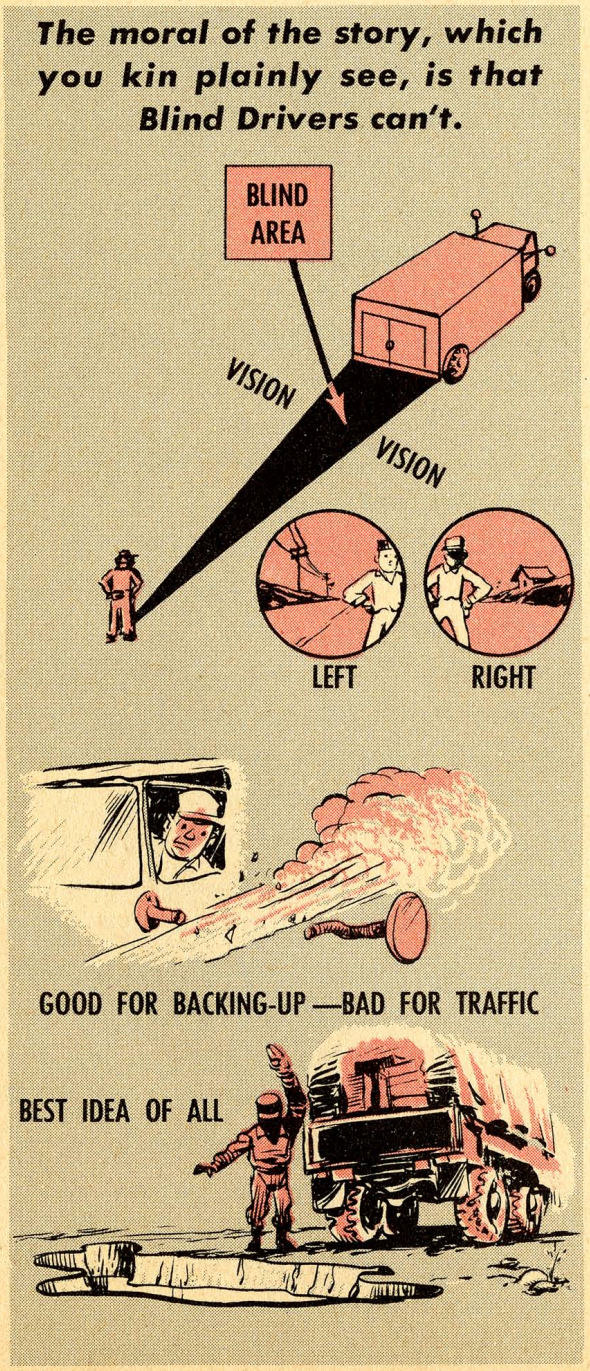
Remember that if your mirror is set for safe backing, a car overtaking you will pass out of the mirror's range **before** it gets alongside far enough to be seen from the cab.

If you have to do lots of driving on four and six-lane roads, it may be more important to see vehicles in the adjoining lanes than to see close behind. And, if you do much night driving, it is all right to set the mirrors so that you have to move your head a little to look into them. This keeps the headlights of following vehicles out of your eyes.

One point to remember in a strange vehicle, an extra wide one, or a large bus, is that if you can see the center line of the road in your left mirror, you are sure you are safely on your own side. And in case of a special load which overhangs your truck, you can adjust your mirrors to cover it and be sure you are not overhanging the other guy's right-of-way.

Even with the best of mirror adjustments, don't overlook the fine old tricks of walking back for a look before backing, or sending your helper back if you have one. The helper should stand where he can see your face, either directly or in the mirror, then he knows you can see him.

All it takes is a little care and common sense to prevent you or your vehicle ending up with a tailgate in a sling.



ORCHIDS TO THE M135

Dear Half-Mast,

We're having classes on the new GMC 2½-ton M135 and we're shy on information—especially on the transmission.

From our experience with the M135 here in Korea, they've got the old GMC's beat 10 to 1. They're holding up good, too, with the preventive maintenance and driver training that's going into the deal. We sure have no complaints.

One thing though, and that's no fault with the vehicle, parts are still pretty hard to get. Perhaps something could be done to help this situation.

SFC R. E. B.

Dear SFC R. E. B.,

Did you see PS #13? It has pages of references on the new vehicles. And more power to you on your training program—sounds like the right approach.

About the parts situation on the M135, I understand that for-sure things are being done about it. And the newer M211's won't even get shipped until sufficient spare parts and special tools are available in the receiving area. This should make everyone happier.

Half-Mast

CLEANING SOLVENT

Dear Half-Mast,

We appreciate all the good information we get from your answer department.

In PS #9 you mentioned Stoddard Solvent—just how do you get it? Every time we requisition it, they return our requisition with a note saying that enamel thinner has replaced solvent and we are to buy it thru local purchase.

Somebody's getting gypped somewhere because the enamel thinner isn't as good for cleaning and costs more than the cleaning solvent. I can buy solvent at the gas station for 69¢ a gallon while the enamel thinner is $1.29 a gallon.

If the Army has gone from solvent to thinner there must be a reason—I'd sure like to know what it is.

Lt Col R. E. V.

Dear Lt Col R. E. V.,

Seems as if the word "Stoddard" is what's throwing off your supply man. Solvent is a QM issue and they say there's plenty of it available. Try asking for solvent, dry cleaning, Stock No. 14-S-4385—it costs the Army only 15½ cents a gallon.

(P.S. If your supply Sarge returns your next requisition on solvent—bounce it back to him and tell him to check his higher supply echelons.)

Half-Mast

CV-JOINT PROTECTION

Dear Half-Mast,

TM's for the new vehicles don't give any dope on lubing the outer surface of CV joints. What about that coat of light oil the CV joints used to get? Does it still apply and where's the poop on it? In our damp climate, dry CV-joints just don't keep.*

Mr. H. I. J.

Dear Mr. H. I. J.,

Lubing the outer surface of CV joints was practiced for a while by some people during WW II. You probably remember the procedure—the joint's outer surface was cleaned and given a light coat of rust-preventive lube after each day's operation. Next day, before the vehicle hit the road, the lube was supposed to be cleaned off.

The practice didn't work out too well, however, because the lube was often left on and the lubed area soon got grimy and abrasive enough to cause unnecessary wear on the seal and the polished surface.

**Constant Velocity*

The best procedure is to keep the outer CV joint area shiny clean—the lube that gets past the felt seal is supposed to be enough to keep it protected. The only time it gets extra lubing attention is when a vehicle is earmarked for storage or shipment.

However, since yours sounds like a special operation problem, suggest you take a close look at the "Lubing Under Unusual Conditions" section in the pertinent TM's. For example: TM 9-819A (TM for the M135 2½-ton 6x6), page 73, para 60 gives you the dope on lubing under unusual conditions, and page 407, para c (3) and (4) cover chassis and body care under extreme weather conditions.

Half-Mast

BODY PARTS, M109 AND M62

Dear Half-Mast,

We have the new shop vans, M109 and can't get any information on repair parts for the body. Ord 8 SNL G742 is fine for the chassis but no help for the body.

Same problem with the M62 wrecker —Ord 8 SNL G744 covers the chassis but not the body and booms.

Where can we get this information?

WOJG J. K.

Dear WOJG J. K.,

Ord 8 SNL G742 (Apr 52) is being revised and will be available in the not too distant future—it should have a lot more dope on the M109. Major repairs on shop van bodies don't seem to be needed too often unless maybe in the case of an accident.

Ord 8 SNL G744 has been revised—have you the latest one? It's dated December 1952 and has a lot of good information on the M62 body and booms. The only other thing on this vehicle would be the book put out by Austin-Western. There was supposed to be one in every vehicle delivered to the Army—maybe you can track down the one that belongs in your wrecker. It's mighty good.

Half-Mast

NDCC* TIRES

Dear Half-Mast,

When I order Stock No. H014-05-05950, Tire 9.00 x 20, Ordnance Supply tells me they don't stock this number anymore. Don't the units rate these changes?

WOJG J. K.

Dear WOJG J. K.,

The older snow and mud type tire has given way to the newer design, non-directional cross-country tire for all Ordnance tactical vehicles. The new vehicles are coming in equipped with the NDCC tire and they are fast replacing the others on the older tactical vehicles.

Can't find your number in Ord 5 SNL H-14 (Dec 49) or any of its 4 changes. What supply catalog are you using for ordering tires? Suggest you ask your nearest I & I team for a little help getting the right number.

Half-Mast

*Non-Directional Cross-Country

CORNSTARCH SHINES 'EM IN HALF THE TIME

Dear Half-Mast,

Please tell PFC T. M. T. (PS #9, page 395) that cornstarch will help solve his car-waxing problems. It's a polishing trick that's a closely guarded secret with a lot of civilian garages, and believe me it really cuts polishing time and labor in half.

Scrub finish thoroughly. Apply wax to one section of the car as usual, then put some cornstarch in an old wool sock, powder puff, or similar soft cloth and dust the cornstarch over the waxed area like a baker dusts his work bench.

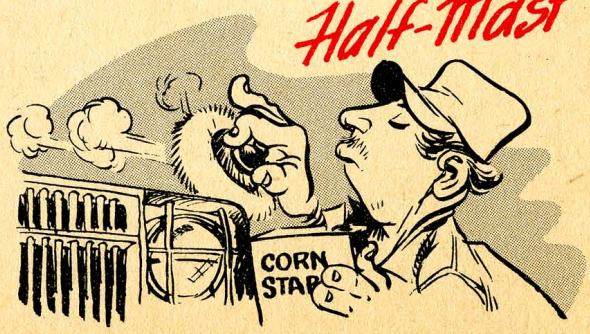
Don't use pressure when dusting—and when the cornstarch-filled bag moves freely over the dusted area, take out the shine cloth, wipe off the dust and watch the shine come through. A word of caution, don't let the car get wet before the cornstarch has been removed.

Pvt T. C. A.

Dear Pvt T. C. A.,

Judging from the stack of mail that's come in since the waxing-worries appeared in PS #9, a lot of people agree with you that cornstarch definitely takes a lot of strain out of a polishing job. Have to try it myself sometime . . . where'd you say you borrowed the powder puff?

Half-Mast



How to hook up **IGNITION COILS** *to make your spark-plugs spark*

Dear Half-Mast,

What is the correct hook-up for the ignition coil on the M135? TM 9-819A shows the coil inserted so that the primary-circuit resistor is connected to the "Negative" side of the coil, but the trucks themselves are coming through with the primary-circuit resistor connected to the "Positive" side of the coil.

J. R. B.

Dear J. R. B.,

Trucks are assembled correctly in production; the M135 has a negative grounded system, and therefore the positive lead from the battery comes through the ignition switch to the resistor, and then to the coil, from where it goes to ground via the breaker points. So you have positive potential at the lead from the resistor to the coil.

Now, some people will tell you that it makes no difference which way you run that current through the coil. They might even point out that it is only in recent years that there has been any marking on ignition coils to tell you which terminal should be connected to the positive side of the ignition circuit. This much is true, and so far as the primary circuit of the coil is concerned, it does not make any difference.

However, not too long ago it was found out that the direction of current in the secondary circuit makes a big difference in the efficiency of the spark plugs. As you know, the actual flow of electrons in an electrical circuit is **from** negative **to** positive. Now when it comes to jumping an air gap, electrons will leave a hot electrode at a lower voltage than they will leave a cold one.

So since the center electrode of a spark plug (which is surrounded by the porcelain insulator) naturally runs hotter than the side electrode which is screwed into the water jacket, the spark plug will fire on a lower voltage if the center electrode is the negative side of the secondary circuit. The coils are wound in such a manner that by connecting the positive side of the battery to the positive or "plus" terminal on the coil, the coil secondary-terminal will be negative, and so will the spark-plug center-electrode.

This will result in about 20% lower voltages in the secondary system, with about 20% less chance of insulation breakdown and carbon tracks on the distributor cap, etc. Notice that the truck will run with a wrongly connected coil, your troubles will only show up under extreme hard starting or much later in the life of the truck.

TM 9-819, for the M34 series Reos shows this coil correctly installed, TM 9-819A for the M135's (Fig. 50, page 165, and Fig. 52, page 168, and the instructions on page 169) will be corrected when next revised.

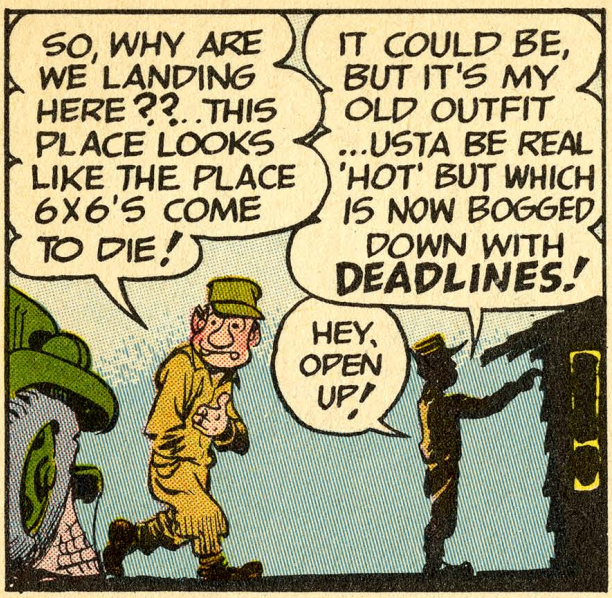
Half-Mast

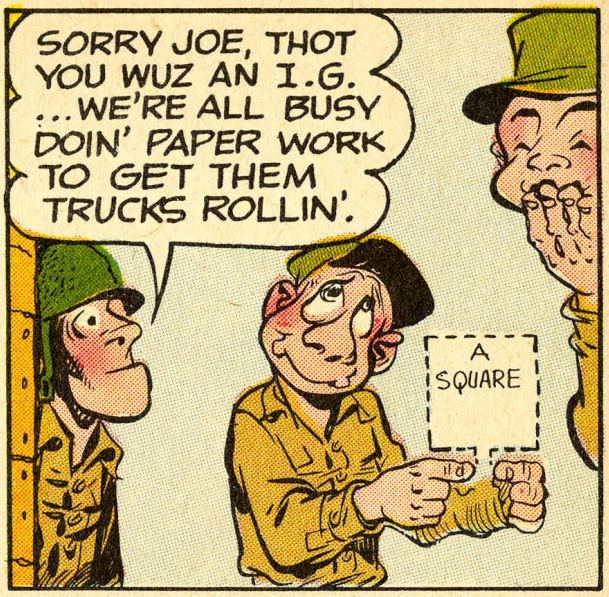
JOE DOPE

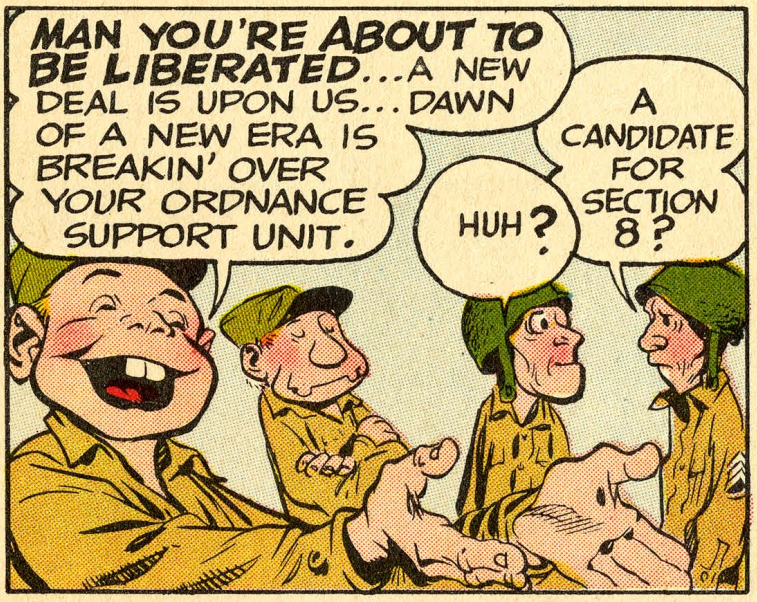
HOW DIRECT EXCHANGE WORKS

MY DEAR FOSGNOFF... THE ARMY—LIKE YOUR OL' MAN'S GROCERY BACK HOME, OPERATES A BUSINESS BASED UPON SUPPLY AND DEMAND. SO NATURALLY IT IS ALWAYS LOOKING FOR NEW AND BETTER WAYS OF DOING THINGS. FOR EXAMPLE... CHANGE 4 TO TM 38-403 GIVES ORDNANCE DIRECT-SUPPORT UNITS THE GREEN LIGHT TO HAND OUT REPAIR PARTS BY **DIRECT EXCHANGE**. YOU KNOW WHAT THAT MEANS?

DO I KNOW WHAT THAT MEANS??...WHY MY DEAR PRIVATE J.U. DOPE IT MEANS **NO-MORE** PAPER WORK FOR THE CUSTOMER—WHICH IN THE ARMY MEANS THE USER.

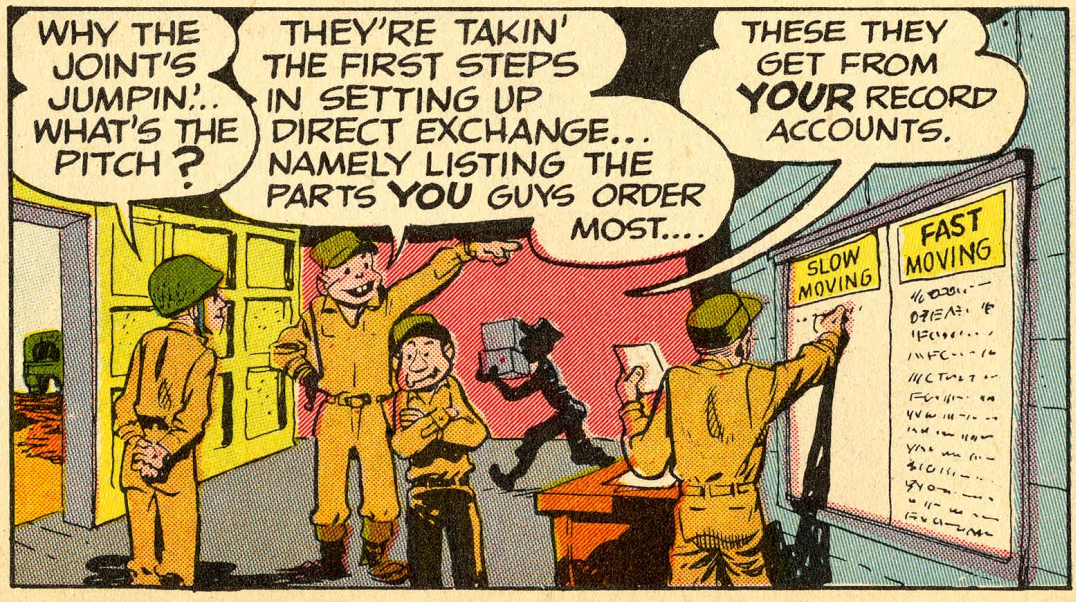

SO, WHY ARE WE LANDING HERE??..THIS PLACE LOOKS LIKE THE PLACE 6X6'S COME TO DIE!
IT COULD BE, BUT IT'S MY OLD OUTFIT ...USTA BE REAL 'HOT' BUT WHICH IS NOW BOGGED DOWN WITH DEADLINES!
HEY, OPEN UP!


SORRY JOE, THOT YOU WUZ AN I.G. ...WE'RE ALL BUSY DOIN' PAPER WORK TO GET THEM TRUCKS ROLLIN'.
A SQUARE

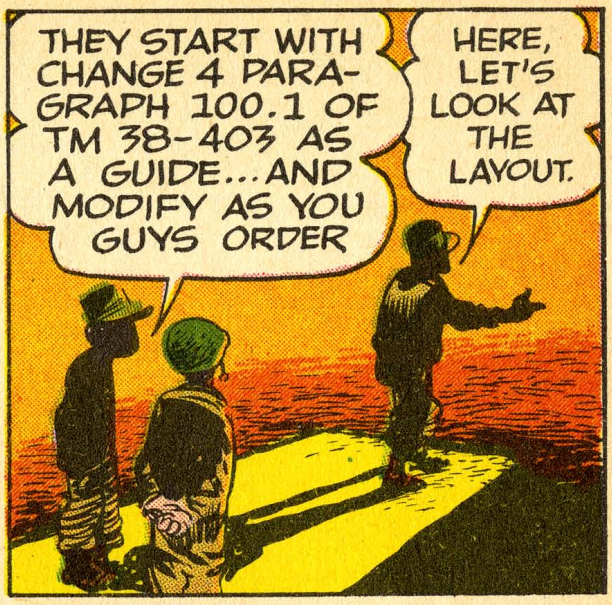

MAN YOU'RE ABOUT TO BE LIBERATED...A NEW DEAL IS UPON US... DAWN OF A NEW ERA IS BREAKIN' OVER YOUR ORDNANCE SUPPORT UNIT.
HUH?
A CANDIDATE FOR SECTION 8?

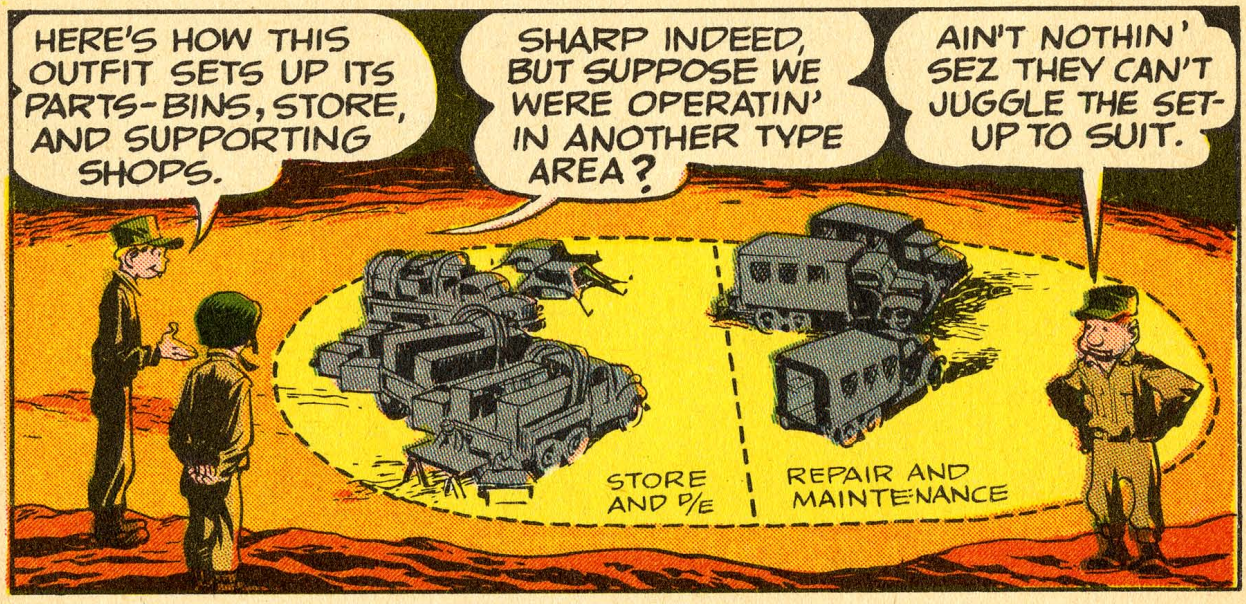
ARISE RABBLE... FOLLOW ME...AND WE WILL VISIT A TYPICAL ORD SUPPORT UNIT AS IT INSTALLS A DIRECT EXCHANGE SYSTEM!

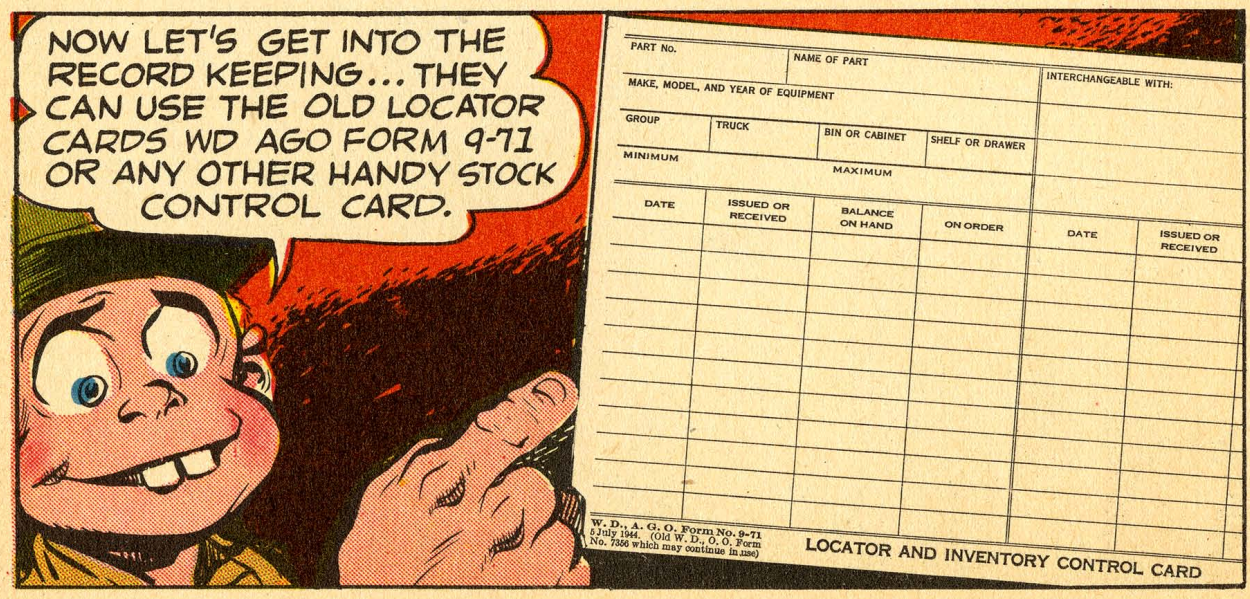
A FEW MINUTES LATER AT THEIR 3RD ECHELON SUPPORT

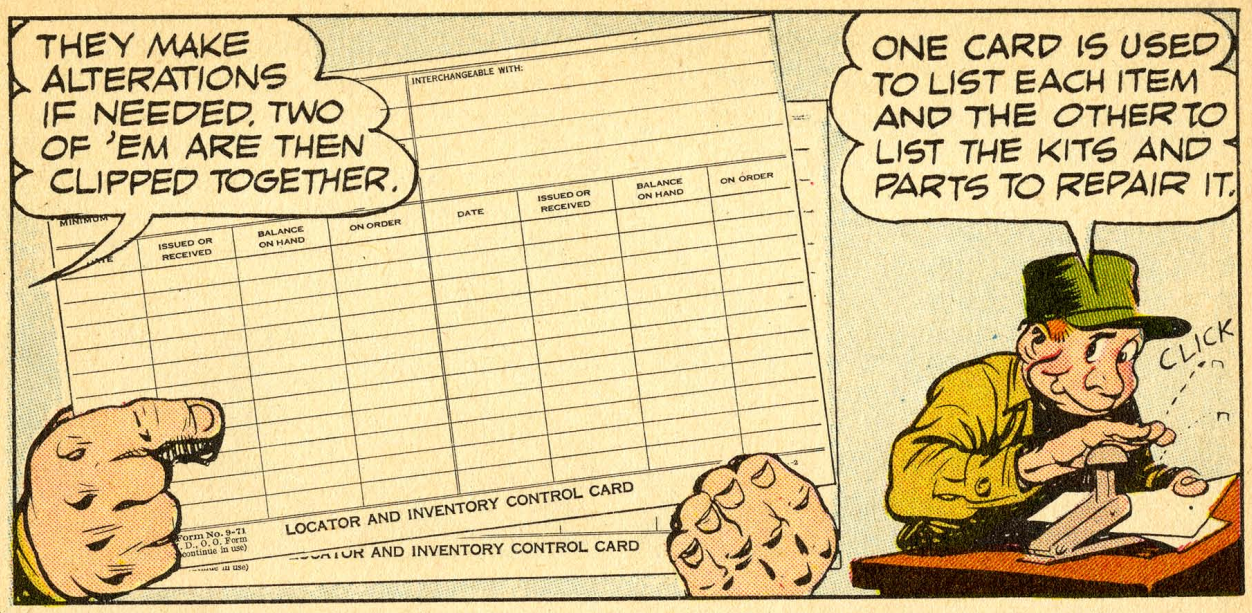

WHY THE JOINT'S JUMPIN'.. WHAT'S THE PITCH?
THEY'RE TAKIN' THE FIRST STEPS IN SETTING UP DIRECT EXCHANGE... NAMELY LISTING THE PARTS YOU GUYS ORDER MOST....
THESE THEY GET FROM YOUR RECORD ACCOUNTS.
SLOW MOVING
FAST MOVING

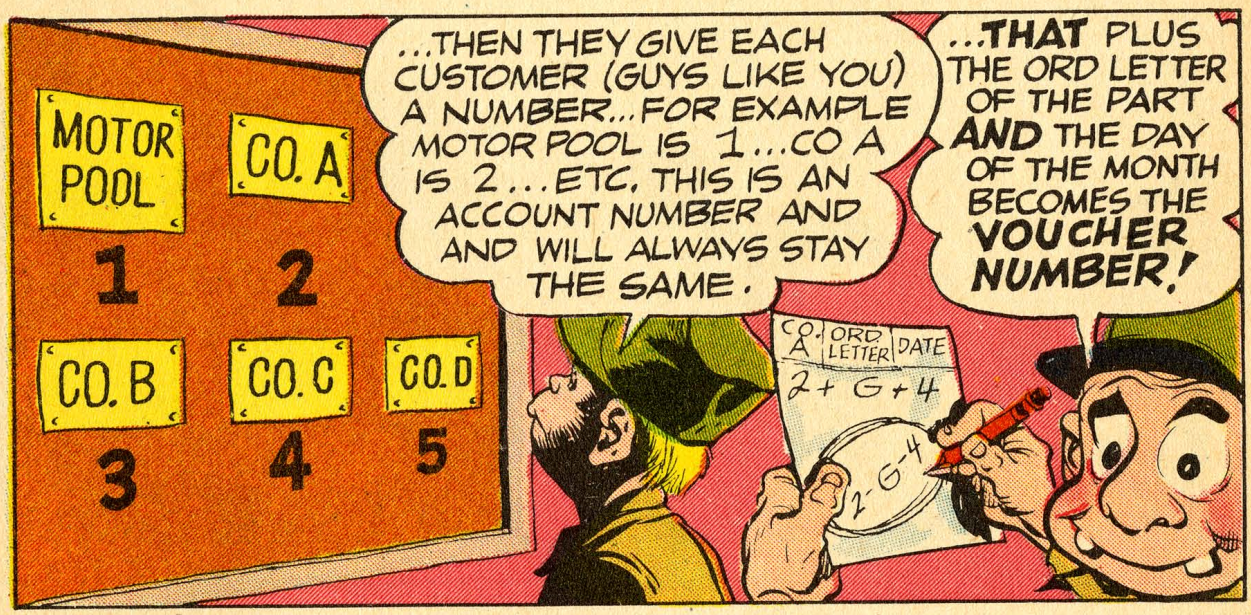
NEXT THEY DRAW THEIR INITIAL STOCK FROM SUPPLY BASED ON WHAT THEY KNOW MOVES FAST...THEY KEEP ABOUT 15 DAYS SUPPLY ON HAND.
WE USE A LOTTA BRAKE LININGS... BUT HOW CAN THEY PREDICT?

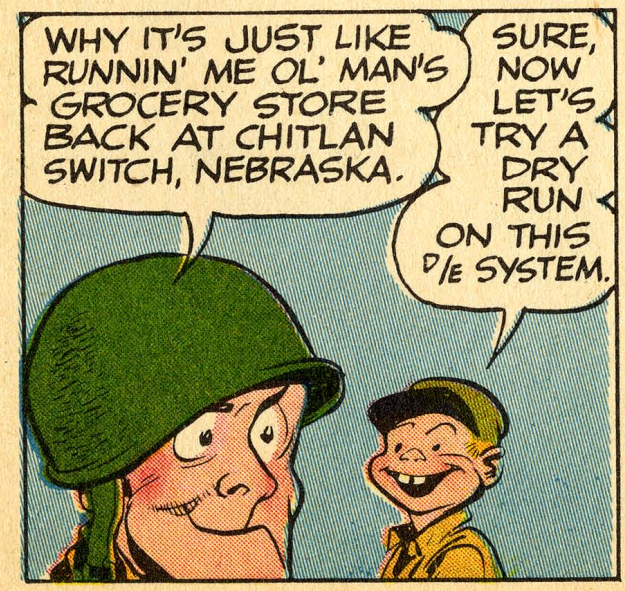

THEY START WITH CHANGE 4 PARAGRAPH 100.1 OF TM 38-403 AS A GUIDE... AND MODIFY AS YOU GUYS ORDER
HERE, LET'S LOOK AT THE LAYOUT.

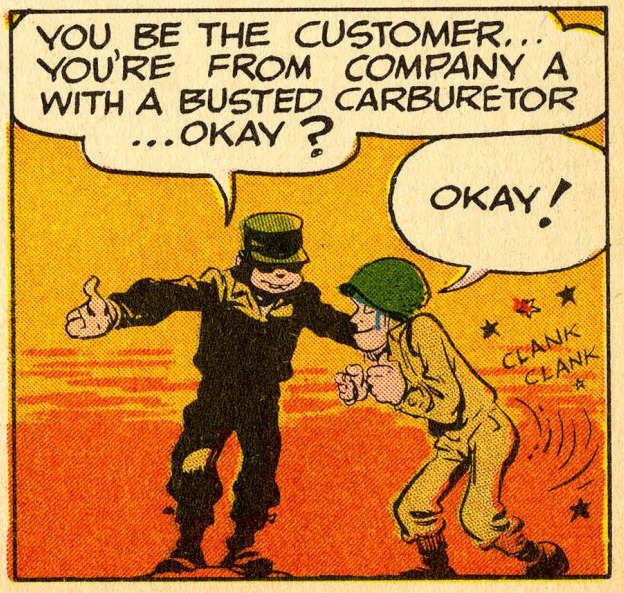

HERE'S HOW THIS OUTFIT SETS UP ITS PARTS-BINS, STORE, AND SUPPORTING SHOPS.
SHARP INDEED, BUT SUPPOSE WE WERE OPERATIN' IN ANOTHER TYPE AREA?
AIN'T NOTHIN' SEZ THEY CAN'T JUGGLE THE SET-UP TO SUIT.
STORE AND P/E
REPAIR AND MAINTENANCE


NOW LET'S GET INTO THE RECORD KEEPING... THEY CAN USE THE OLD LOCATOR CARDS WD AGO FORM 9-71 OR ANY OTHER HANDY STOCK CONTROL CARD.
PART No.
NAME OF PART
INTERCHANGEABLE WITH:
MAKE, MODEL, AND YEAR OF EQUIPMENT
GROUP
TRUCK
BIN OR CABINET
SHELF OR DRAWER
MINIMUM
MAXIMUM
DATE
ISSUED OR RECEIVED
BALANCE ON HAND
ON ORDER
DATE
ISSUED OR RECEIVED
W. D., A. G. O. Form No. 9-71 (July 1944. (Old W. D., O. O. Form No. 7356 which may continue in use)
LOCATOR AND INVENTORY CONTROL CARD


THEY MAKE ALTERATIONS IF NEEDED. TWO OF 'EM ARE THEN CLIPPED TOGETHER.
INTERCHANGEABLE WITH:
MINIMUM
DATE
ISSUED OR RECEIVED
BALANCE ON HAND
ON ORDER
DATE
ISSUED OR RECEIVED
BALANCE ON HAND
ON ORDER
Form No. 9-71 (U. S. O. Form continue in use)
LOCATOR AND INVENTORY CONTROL CARD
LOCATOR AND INVENTORY CONTROL CARD
ONE CARD IS USED TO LIST EACH ITEM AND THE OTHER TO LIST THE KITS AND PARTS TO REPAIR IT.
CLICK


MOTOR POOL
1
CO. A
2
CO. B
3
CO. C
4
CO. D
5
...THEN THEY GIVE EACH CUSTOMER (GUYS LIKE YOU) A NUMBER... FOR EXAMPLE MOTOR POOL IS 1... CO A IS 2... ETC, THIS IS AN ACCOUNT NUMBER AND AND WILL ALWAYS STAY THE SAME.
...THAT PLUS THE ORD LETTER OF THE PART AND THE DAY OF THE MONTH BECOMES THE VOUCHER NUMBER!
CO. A
ORD LETTER
DATE
2+ G+4
2-G-4


WHY IT'S JUST LIKE RUNNIN' ME OL' MAN'S GROCERY STORE BACK AT CHITLAN SWITCH, NEBRASKA.
SURE, NOW LET'S TRY A DRY RUN ON THIS D/E SYSTEM.


YOU BE THE CUSTOMER... YOU'RE FROM COMPANY A WITH A BUSTED CARBURETOR ...OKAY?
OKAY!
CLANK CLANK

EVERY "CUSTOMER" SHOULD HAVE AN IDENTIFICATION PASS.
DATE 15 June 1953
SUBJECT: Authorization to Receipt for Supplies
TO: Your Direct Exchange Store
The undersigned hereby (delegates to)(withdraws from) the person whose signature appears below, authority to sign (requests and receipts) for and in the name of Your Unit, for strictly (expendable)(non-expendable) (ammunition) supplies for Division for which I accept full responsibility.
Signature of your CO.
Signature
Rank
Badge or Serial No.
Accountable Officer
Responsible Officer
FT GEO G MEADE - 20,000 - 5 JAN 5
SAA FORM 945 (5 Nov 51)
ONLY SECTION 3 OF TAG IS FILLED BY "CUSTOMER".
HERE'S ME PASS AND THE PART PROPERLY TAGGED.
HERE'S A REBUILT CARBURETOR IN EXCHANGE!
GREAT...BUT WHAT HAPPENS IF THEY AIN'T GOT ONE IN STOCK?
SIMPLE, SHOW HIM FOSGNOFF.
FIRST I FILL OUT PARTS 1 AND 2 OF THE EXCHANGE TAG...
LIKE THIS...
build
Reclaim
model M 38A1
registration No. USA41069763
Part No. G758-8329774
Item CARBURETOR ASSY.
14. Date READY ~~exchanged~~ SEPT. 3
15. Back order No. your account
16. Filled by number goes here
17. Vehicle make and model M 38A1
18. U. S. registration No. USA41069763
19. Part No. G758-8329774
20. Item CARBURETOR ASSY.
21. Date READY ~~exchanged~~ SEPT 3
22. Back order No. your account number goes here
WD AGO FORM 15 JUN 1944 9-81
(Old W. D., O. O. Form No. 7370 which may continue in use)
See AR 850-15, C3
THEN I HAND YOU PART 1 AS A DUE OUT RECEIPT.
PART 2 IS KEPT IN A COUNTER BOX. PART 3 STAYS WITH THE PART.

IN CASE Y'R CURIOUS THIS IS A THREE-PART TAG PROPERLY FILLED OUT!

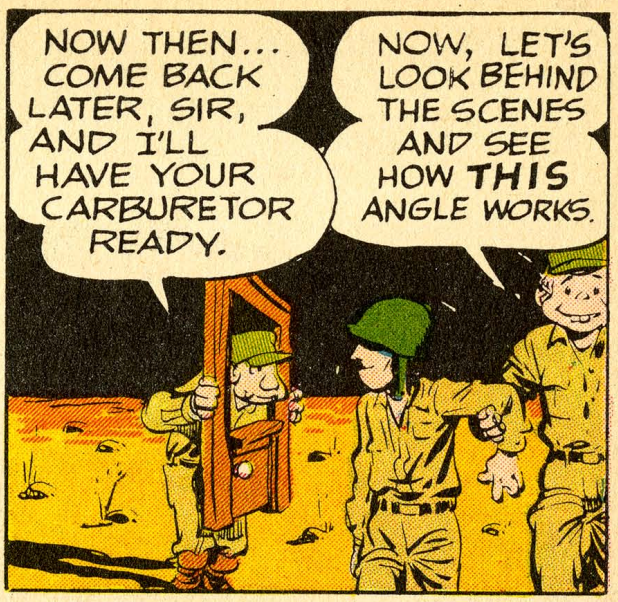
EX UNIT IDENTIFICATION TAG

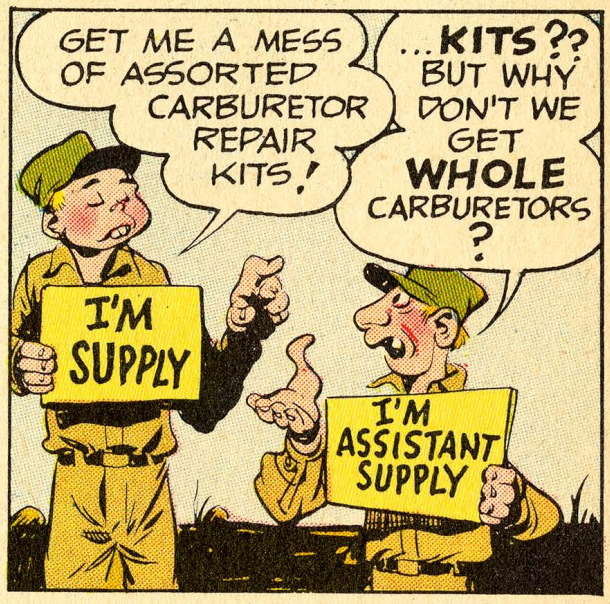
1. Vehicle make and model M 38A1
2. U. S. registration No. USA41069763
3. Part No. G758-8329774
4. Item CARBURETOR ASSY
5. Organization your account number goes here 3
6. Job order No.
7. Repair Rebuild Reclaim
8. Final disposition
9. Inspector
10. Vehicle make and model M 38A1
11. U. S. registration No. USA41069763
12. Part No. G758-8329774
13. Item CARBURETOR ASSY.
14. Date ~~exchanged~~ READY SEPT. 3
15. Back order No. your account number goes here 2
16. Filled by
17. Vehicle make and model M 38A1
18. U. S. registration No. USA41069763
19. Part No. G758-8329774
20. Item CARBURETOR ASSY.
21. Date ~~exchanged~~ READY SEPT. 3
22. Back order No. your account number goes here 1

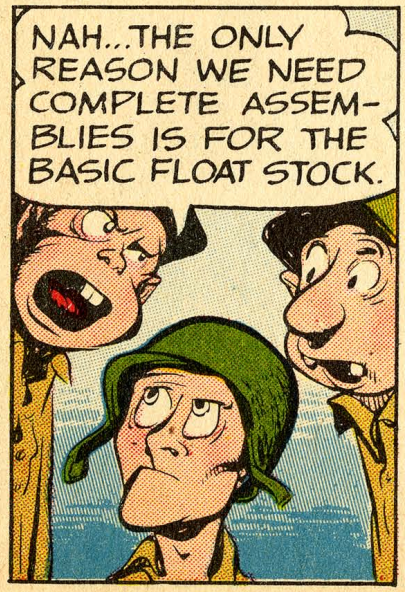
WD AGO FORM 15 JUN 1944 9-81

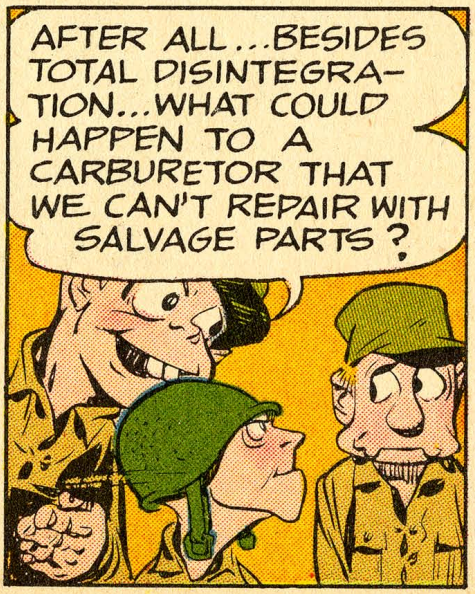
(Old W. D., O. O. Form No. 7370 which may continue in use)
See AR 850-15, C3

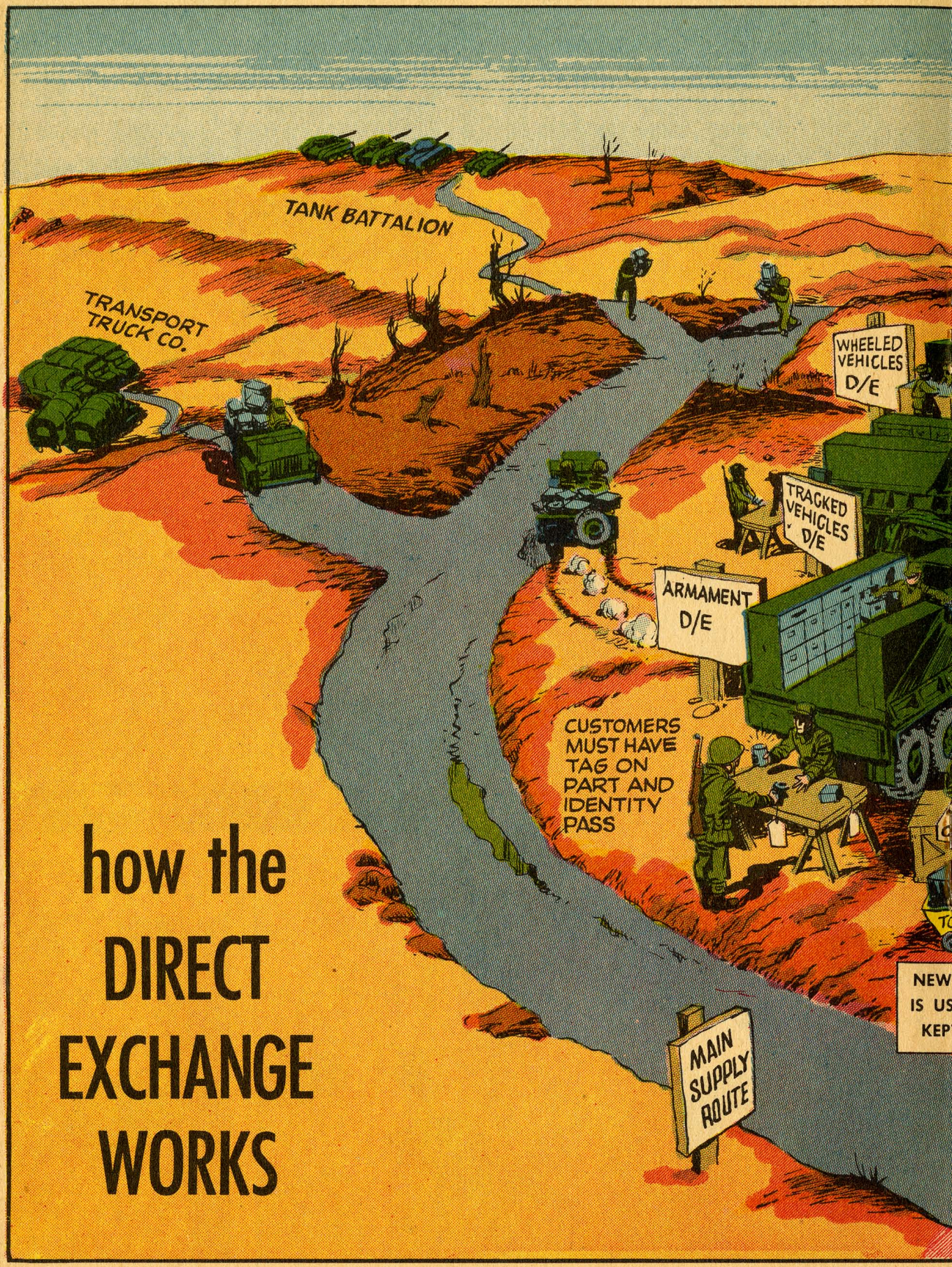
(Over)

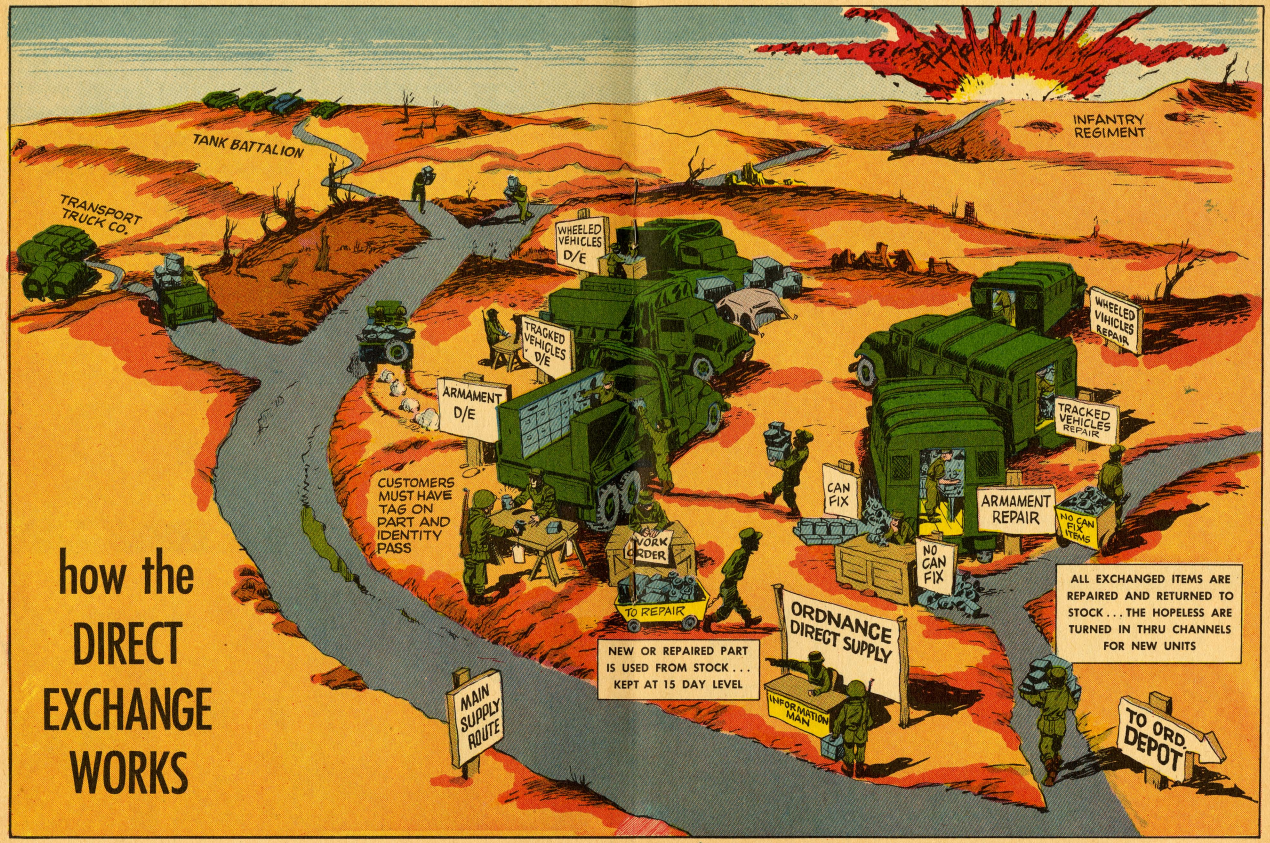









TANK BATTALION
TRANSPORT TRUCK CO.
WHEELED VEHICLES D/E
TRACKED VEHICLES D/E
ARMAMENT D/E
CUSTOMERS MUST HAVE TAG ON PART AND IDENTITY PASS
MAIN SUPPLY ROUTE
how the DIRECT EXCHANGE WORKS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WORK ORDER
TO REPAIR
NEW OR REPAIRED PART IS USED FROM STOCK . . . KEPT AT 15 DAY LEVEL
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CAN FIX
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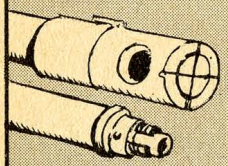
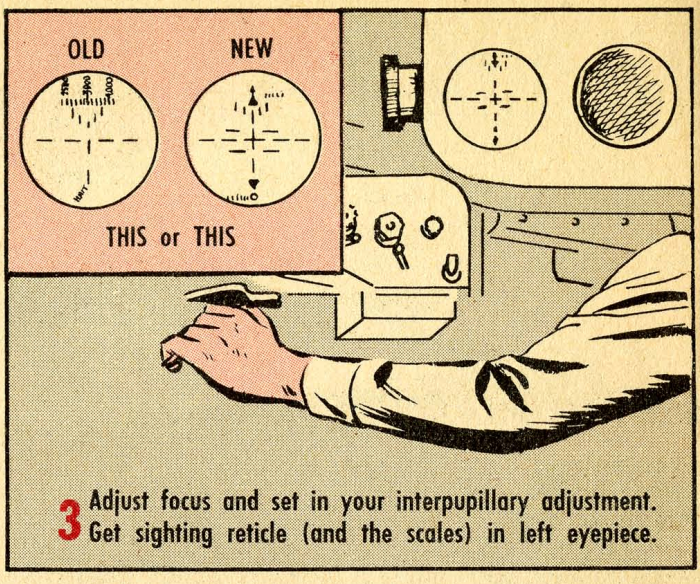
Here's a Shortcut in case you need it
BORESIGHT and ZERO-IN the M47 Tank



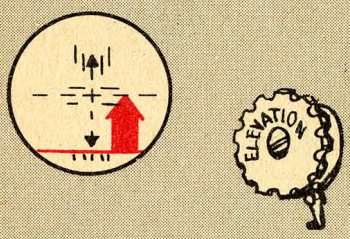
1 Get your tank on level ground with target dead ahead.

2 Tape on cross hairs (blackthreads) using witness marks on gun tube or muzzle brake to be sure they cross in center.

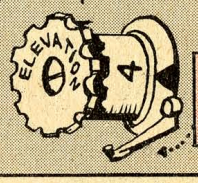


3 Adjust focus and set in your interpupillary adjustment. Get sighting reticle (and the scales) in left eyepiece.

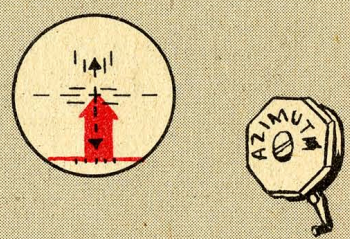
7 With boresight knob set elevation



Then lock, and slip its scale to 4



8 With boresight knob set azimuth



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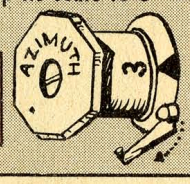
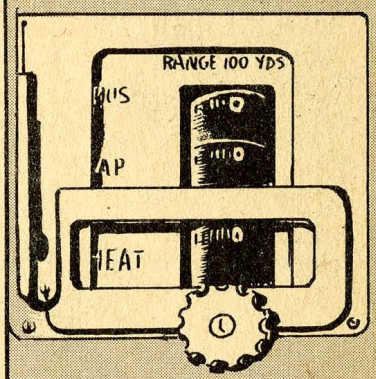


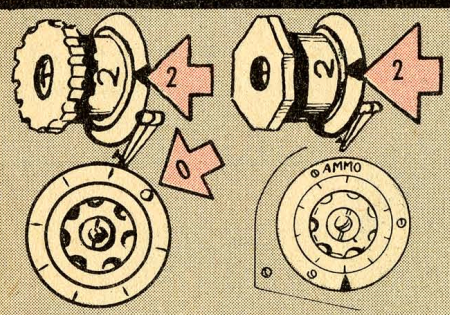
THIS 4 & 3 TELLS YOU THE RANGE FINDER IS BORESIGHTED.

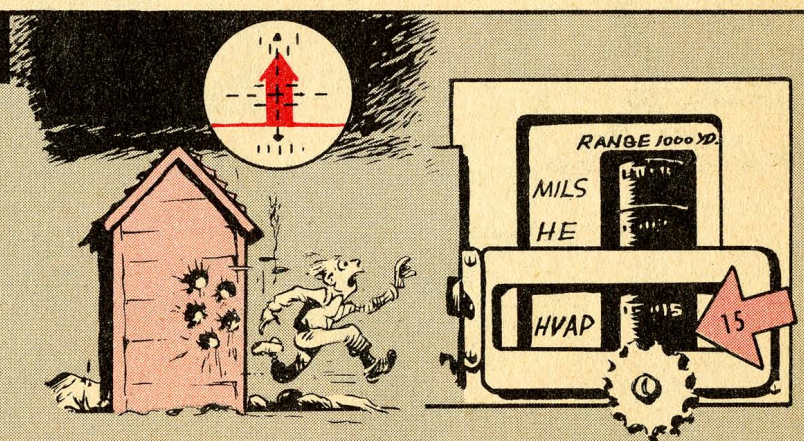
NOW, THE



9 Adjust ballistic drive to 0.

TO ADJUST FOR JUMP AND DRIFT





12 Turn range finders boresight knobs to 2 . . . Ballistic correction to 0 . . . Ammo knob to ammo being used.

13 Range on . . . Lay on target center . . . and fire five. (Lay on in the same direction before each shot).

14 Set ballistic drive range scale to target's range for ammo used.

Here's a Shortcut in case you need it
BORESIGHT and ZERO-IN *the M47 Tank*

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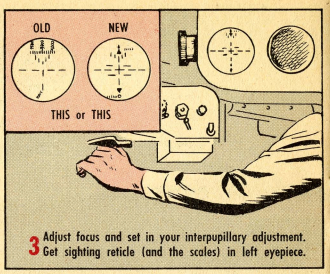

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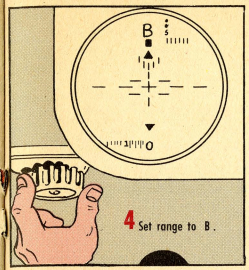

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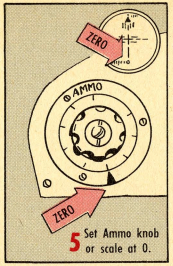
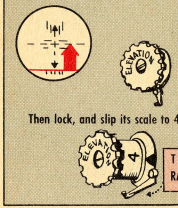


5 Set Ammo knob or scale at 0.

6 Get gun tube cross hairs dead on aiming point.

7 With boresight knob set elevation



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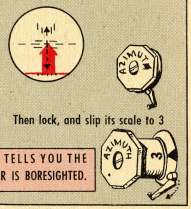

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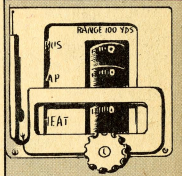

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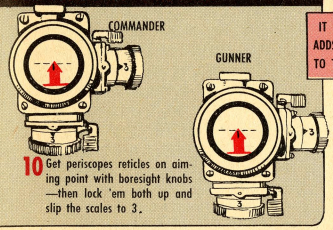

10 Get periscopes reticles on aiming point with boresight knobs —then lock 'em both up and slip the scales to 3.

11 Everything should now be dead on aiming point

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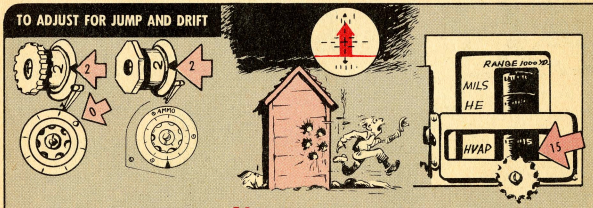

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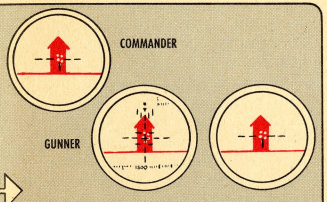
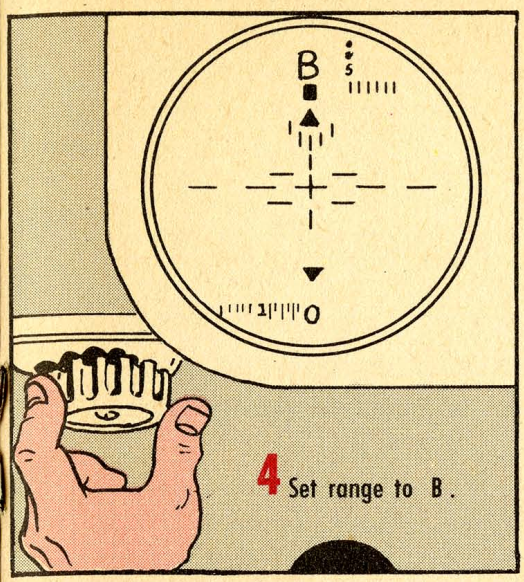


15 Then with range finder's and scope's boresight knobs put all aiming reticles on center of shot group—lock knobs take down numbers. This is your zero reading.

FOR THE REALLY FINE POINTS AND GREATER ACCURACY READ THE FOLLOWING ARTICLE . . .



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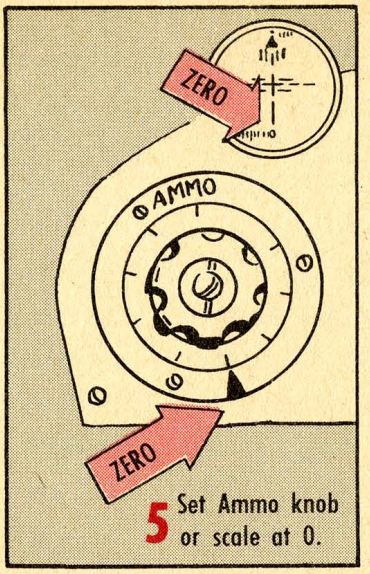

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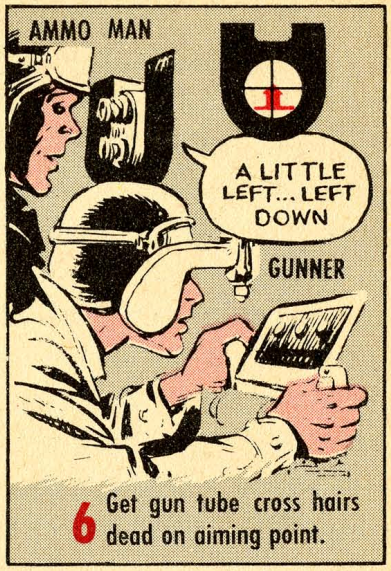
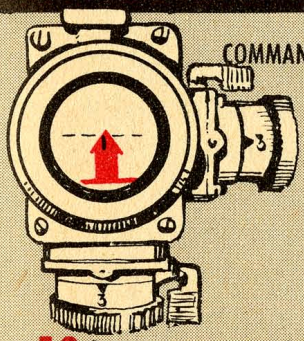
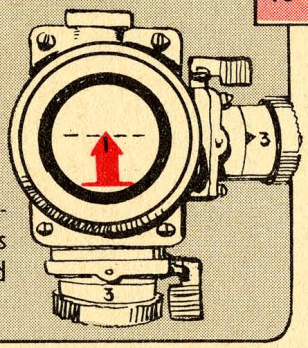


6 Get gun tube cross hairs dead on aiming point.

SECONDARY SYSTEM





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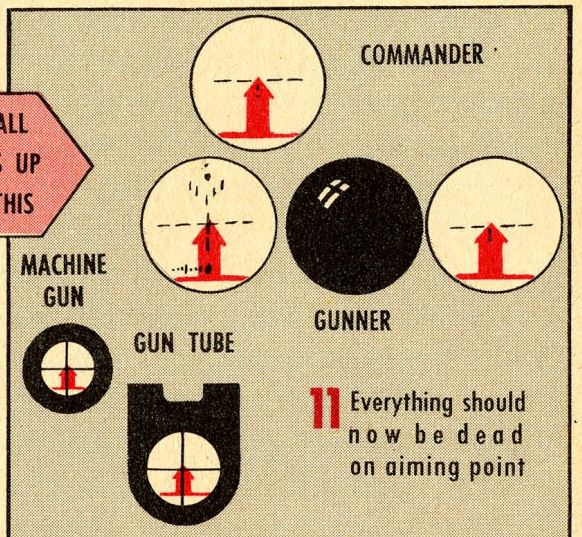

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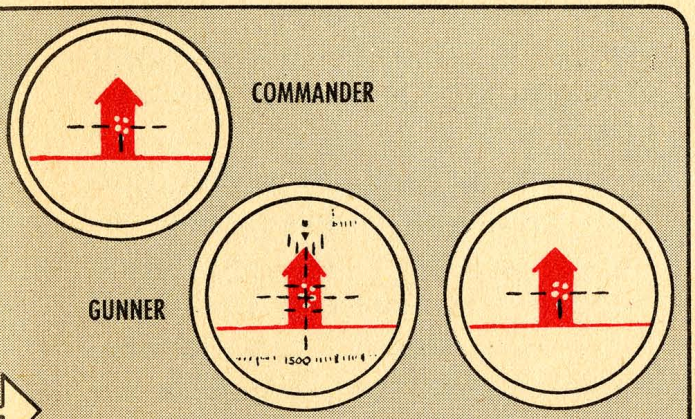

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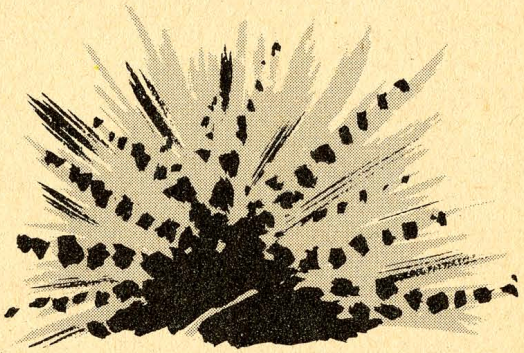


FOR THE REALLY FINE POINTS AND GREATER ACCURACY READ THE FOLLOWING ARTICLE . . .

how to CONTROL *your* FIRE CONTROL *on the* M47 TANK

A tank with a big gun is nice to have around, but it isn't much more than window-dressing unless it can hit a target that's in your way. When it comes to first-round hits, the M47 does a mighty fine job—especially with the T41 range finder under its belt. Once this gadget is boresighted and zeroed, the gunner can give any target the business, quickly:

1. Bring the turret on target using the turret controls.
2. Turn the range knob until the center vertical line of the range pattern (Flying Goose) is in the same depth plane as the target.
3. Lay the firing reticle dead on the target center—and **fire.**

That's all there is to it if everything's in good order. Here's how to make sure.

RANGE FINDER

The range finder is worked by the gunner who indexes the ammo-type, ranges, tracks the target, and fires the gun. This weapon is rigged to be fired from a stand-still position, against a fixed or moving target.

The commander, using his T35 periscope and tracking control, can also fire on stationary or moving targets by overriding the gunner's controls. But you, the gunner, are the only one who operates the range finder. It's all yours—along with those first-round hits.

THE RANGE AND YOU

This range finder isn't fully automatic . . . the way you range the instrument has a lot to do with getting first round hits. Ranging is done stereoscopically and it's what you must master to get 'em on the first shot. The flying geese or "V" in the sighting scope is the stereoscopic pattern—its lower bar (the leading goose) must be dead over your aiming point (in the same depth plane) for a perfect range. If it's in front of your aiming point, you'll be short—behind, you'll be over. So if you're a gunner, it'll behoove you to practice this three dimensional type of ranging—it's easy once you get the hang of it. Here's how it works:

When viewing an object thru both eyepieces, it will appear behind or in front of the flying geese, depending on the range already set in the range finder. Turn the ranging knob until the flying geese appear directly above your aiming point. This puts your range in the approximate vicinity of your aiming point. Continue turning the

range knob easy like until the lower verticle line of the "V" (the leading goose) appears dead over the aiming point...now you have your range which will appear on the range scale of the reticle pattern. Try this a couple of dozen times and see if you come up with the same range reading each time... dead-eye Dicks are made, not born.

CHECK YOUR EQUIPMENT

To be sure the sighting equipment isn't on the blink, try these for size:

1. For normal operation, you should see the sight reticle, the range scale, and the ammunition scale in the left eyepiece—and the stereo pattern in both the right and left eyepiece.

2. Now, turn the HALVING knob. This should get you an up-and-down movement of the stereo pattern in the **left** eyepiece.

3. Back to normal, and then move the SCALE TRANSFER LEVER toward the gunner. Now, you should see the range scale, the ammunition scale and the sight reticle in the right eyepiece. The stereo pattern is gone from both eyepieces. Check?

If you find any of these things out of wack... call Ordnance.

INDIVIDUAL DIFFERENCES

The man who's going to do the looking should set in his own inter-pupillary (space between the eyes) and diopter (focus) adjustments—since each man's eyes work a little differently, the sight must be adjusted for the differences.

Turn your light switch to SCALES and STEREO, and put some light on the subject by turning up its rheostat until you see the scales and gun-laying reticle. With the HALVING knob, put the left and right stereo patterns on the same level.

Now, for the INTERNAL CORRECTION SYSTEM:

First, set the ICS knob on (25), then pick out an aiming point of known range, and set in this range on the range scale by turning the range knob. Look through the eyepieces and turn the ICS knob until your eyes see the leading goose dead over the aiming point. Now read your ICS knob and write down the reading. Do this five times and use the median for your ICS setting (this median is the middle reading between the highest two and the lowest two of the five). The ICS setting you get is for your eyes and that particular range finder on that particular day.

If you don't have time to find your ICS, just keep the setting at (25). This is sort of a compromise to take care of the emergencies.

BORESIGHTING

Besides placing the "leading goose" over your aiming point... accurate boresighting and zeroing-in is also part of the secret of first-round hits. The general idea is to get the sights of your tank instruments in line with the gun so they'll

cross on a given target.

To get them in line, the first thing to do is put the tank on as level ground as possible, and select a sharp and distinct aiming point on an object about 1500 yards away. (You'll get the point better if this target is something with a square corner, rather than a tree or such.) Cross and tape two black threads or strings across the gun tube's muzzle, using the muzzle brake's witness marks to be sure they cross in the center. If you haven't a muzzle brake, use the marks on the gun tube itself.

Then take the firing-pin out of the breechblock, and with the breechblock closed, look through a binocular held against the firing-pin hole. As you look through the gun bore, tell the gunner or somebody to elevate or traverse the gun with the manual controls until the cross-string's intersection is lined up on the aiming point's nose. (Incidentally—always use manual traverse and elevation when making these adjustments. It's safer, because you **could** drift in power. And make sure the accumulator pressure is high enough to hold the gun on the aiming point. If it isn't, pump the accumulator pump three to five strokes.)

LEFT EYEPIECE

With the cross-string's intersection on the aiming point, flip the SCALE TRANSFER lever away from the gunner and get the scales in the left eyepiece. Then turn the RANGE scale to "B" and the AMMO knob to "0."

Line up the gun-laying reticle's aiming cross on your aiming point by using the range finder's AZIMUTH and ELEVATION knobs and lock them. Then move the slip scale on the ELEVATION knob to (4), and the slip scale on the AZIMUTH knob to (3). This (3 and 4) is the sign-language that tells you it's boresighted, but hasn't been adjusted for jump, drift, wind, or some other #%$%#— condition which may effect the projectile.

RIGHT EYEPIECE

Since boresighting the left sighting-system automatically lines up the right, all you do to put the good work over into the right eyepiece is move the SCALE TRANSFER lever toward the gunner. This done, the reticle will be to the left of the target, but when you set the 1500 yard range in to the finder, they'll automatically come together again —you'll be on target.

T35 PERISCOPE

Both the gunner and the commander have T35 periscopes, and each should set his own diopter. If it's hazy or overcast, turn up the 'scope's reticle-light for a better see.

Set the range scales on your Ballistic Drive to "0." Sighting through each 'scope, line up the aiming cross with the aiming point, using the scope's horizontal and vertical boresight-knobs—like you did with the range finder. Clamp the knobs and set their slip-scales to (3).

HOLD YOUR OWN

You'll find optical parallax error cut down if you keep your head steady against the head rest the whole time you're boresighting. And to cut down on the effects of any back-lash, always lay the gun in the same direction you used when you started to boresight.

FINISH THE JOB

Check the line-up: The 90mm gun, range finder, gunner's periscope, and commander's periscope should all be on target. If one of them moved while you were adjusting the others, set it up again.

With that done, line up the coaxial-mounted machine-gun by looking through its barrel and turning the knobs on the elevating and traverse-adjusting mechanism. You'll find these on the cradle assembly, just below the rear locking-pin. Point the barrel squarely at ye olde aiming point.

JUMP, PARALLAX AND DRIFT

If you could fire in a vacuum, with a rigid, unmovable gun, you'd be set—but never was such calm. To hit your mark you've got to compensate for jump, sighting-equipment parallax, and drift. Other odd-and-end factors also creep in, but they're usually minor.

To get at the main three: First put up a target 1000 to 1500 yards downrange, boresight, unclamp the range finder's ELEVATION and AZIMUTH boresight knobs and turn them to (2) and clamp them there.(In case of emergency when it's impossible to establish a "zero" by firing on a target, leave both knobs on "2".)Turn the BALLISTIC CORRECTION knob to "0" and set the AMMO knob to the type of ammo being used. Range on the target, using the RANGE knob and STEREO pattern.

Next, using the turret and gun-controls, put the aiming cross on the target center and fire five rounds for a shot group. (Check before firing each round to see if aiming cross is still on aiming point. If not, lay it on—always in the same direction.) With the gun on the target-center again, move the sighting reticle to the shot-group's center with the range finder's boresight knobs and lock them in place. Then turn the range knob of the Ballistic Drive M3 (T23E1) to the target's known range for the ammo fired. With the T35 periscope's elevation and azimuth boresight knobs, lay the aiming cross on the same point as the range finder's aiming cross and lock the knobs.

A wise thing to do at this point is record the numbers on the range finder's and T35's boresight knobs and the range in the gun book. Some day you might need to zero them without firing a shot group—then you do it by boresighting, slipping the ELEVATION scale to (3) and the AZIMUTH scale to (4), unlocking the knobs and turning them to the recorded numbers. This gives a good emergency zero.

ELUSIVE ZERO

While we're on the subject of zeroing on target—your zeroing is going to vary from day to day and even during the day. If you had her zeroed this morning and a hot sun beats down, you can be off as much as ¾ of a mil by noon. Same holds true if the gun's over the tank engine's heat—or if your hot tube gets caught in a sudden downpour, the rain cools off the top of the gun faster than the bottom.

Firing a few rounds won't correct for this tube bend. Both the top and bottom of the tube heat up uniformly during firing—and the difference you had to begin with is still there, hotter on top or hotter on the bottom. And the longer the gun tube, the greater the bend. These are sad facts, but true facts that every good gunner should know.

DISPLACED-TARGET BORESIGHTING

What to do when there isn't enough space for a distant target is answered with a "displaced" target. This will direct the sights and gun-bore in parallel lines.

First, make a target. Use Figure 1 for dimensions and displacements. Then roll the tank onto level ground and put the target parallel to the gun trunnions at least 100 yards from the range finder.

For anything less than 400 yards, cover the range finder's left objective-window and both T35 periscopes' eye-lenses with cardboard discs (tape 'em on) and put a pin-hole in the discs at the lens' exact center. Looking through these holes will keep you in line.

Now, line up the 90mm and machine guns with the target's cross-lines for each, and the range finder's

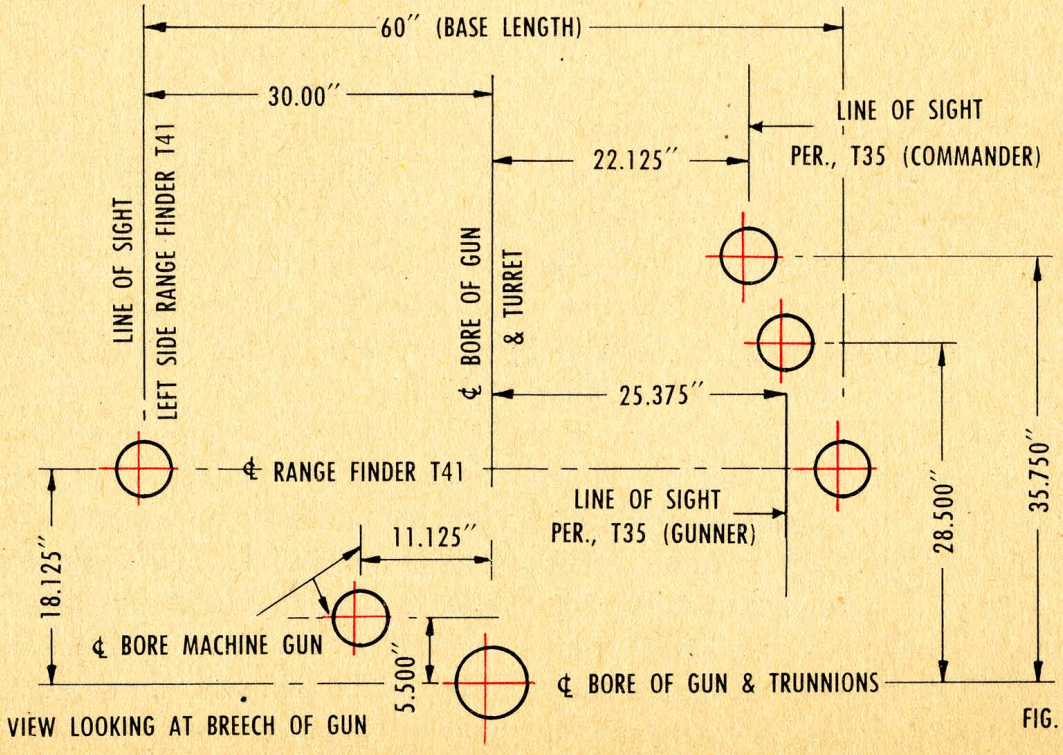


FIG. 1

reticle on its target cross-lines. Clamp the boresight knobs and slip the ELEVATION scale to (4) and the AZIMUTH scale to (3). Do the same for both T35 periscopes, but slip their scales to (3). Your sights and guns should be parallel to each other. There's no need to boresight the right side of the range finder on a close target.

To unparallel the sights and gun-bore so's they meet at 1500 yards, and to compensate for jump, sighting-equipment parallax, and drift, turn the elevation and azimuth boresight-knobs of the range finder to 1.5 and clamp them. Then turn the elevation boresight-knobs of the periscopes to 1.5 and the azimuth knobs of the 'scopes to 2.5 and clamp them, too. But at your first chance, zero by firing a shot group at a target to be sure you're right.

THE SECONDARY SYSTEM

If there's no range finder in your M47 Tank, work the secondary fire-control system. Boresighting this system is the same as boresighting the range finder. Be sure to turn the ballistic drive's range knob to "0."

To compensate for jump, sighting-equipment parallax, and drift, turn both periscopes' boresight knobs to (2) and clamp them there.

Line up the gun-laying reticle's aiming-cross on the target using the manual gun-control handwheels. Now fire your rounds for a shot group—laying the gun in the same direction, on the same aiming point, for each round. With the gun on the aiming point again, use the boresight knobs to move the reticle to the shot group's center of impact and lock the knobs.

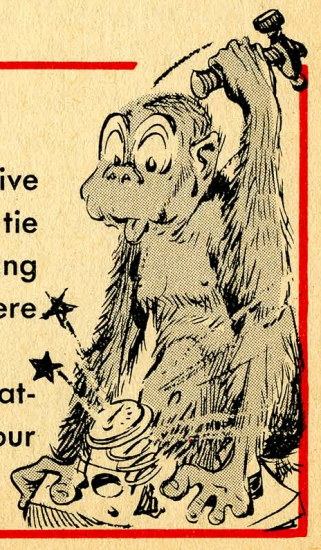
WHAT'S IN A NAME?

A last word on the M47's range finders. You'll find some tanks with a T41 range finder and some tanks with a T41E1 or T41E3 range finder. For your purposes in knowing how to use it (or them) and when to do what and why, only the names are different. Let the boys who have to know about their innards worry about which twin has the Toni.

PLEASE . . . *no monkey business*

First-round hits depend on the range finder, ballistic drive and periscopes being happily married. The rods that tie them together are neither chinning bars nor steps. Hang on them or climb on them and you'll never know where your shells are going.

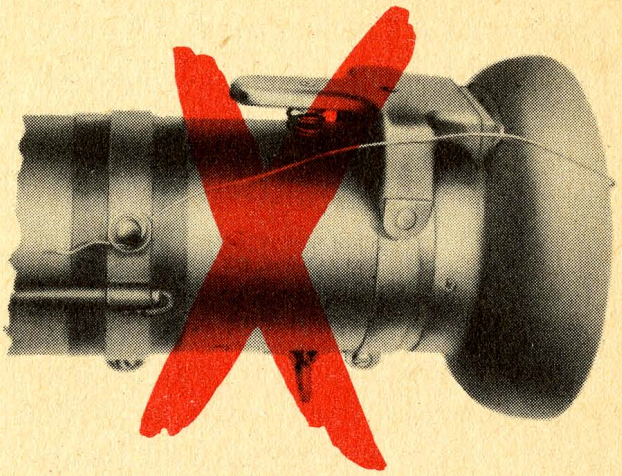
And please, friend, when the knobs and dials stick, beating on the boxes won't help. Believe it. Whistle up your Ordnance support instead.



ARMAMENT & AMMUNITION

How to streamline your

M20 and M20B1 *3.5-inch* Rocket Launcher



That contact lead wire on the M20 and M20B1 3.5-inch Rocket Launcher can no longer stray during firing and give you pains in the neck. You'll have no trouble with the all-new contactor-latch assembly, that's going on M20A1 and M20A1B1 Launchers now in production.

Better still, you can add the new contactor-latch assembly to your old M20 and M20B1 Launchers—a DAMWO will be coming your way when an adequate supply of parts is available.

The contactor-latch assembly is built on a thin steel-strap assembly that is held in place by a screw and nut arrangement on the underside of the launcher. A cover protects the latch-assembly mechanism and fits the contour of the barrel opening (Fig. 1). The cover is removable, but the latch assembly and steel strap are welded into one lightweight unit. The contactor-latch-assembly switch helps carry current to the "hot finger" that contacts the rocket's live band. This saves you having to position the rocket's contact-lead-wire to the launcher's contact-terminal. The electrical current is automatically regulated by an operating lever built into the remodeled contactor-latch assembly. Result: increased launcher efficiency.

The operations chief will also benefit. Loading motions are reduced from 5 to 2, and even night-firing will lose the grunt and grope to position the rocket. Now, as you slide the rocket into the barrel, it's automatically indexed in one simple operation by a stop that contacts the front edge of the rocket-fin's shroud-ring (band).

Here's how it works: To load the launcher, you push down the operating lever which automatically lifts the blast vane, lowers the stop, and opens the firing circuit (Fig. 2). When the rocket slides home, the ground detent is cammed into the ground contact groove of the rocket fin and your rocket is now

neat'n cozy in the launcher tube.

All's to do then is to push the lever into firing position (straight up). This automatically lowers the blast vane, raises the stop that holds the rocket snug (Fig. 3), and closes the electrical circuit and you're ready to fire.

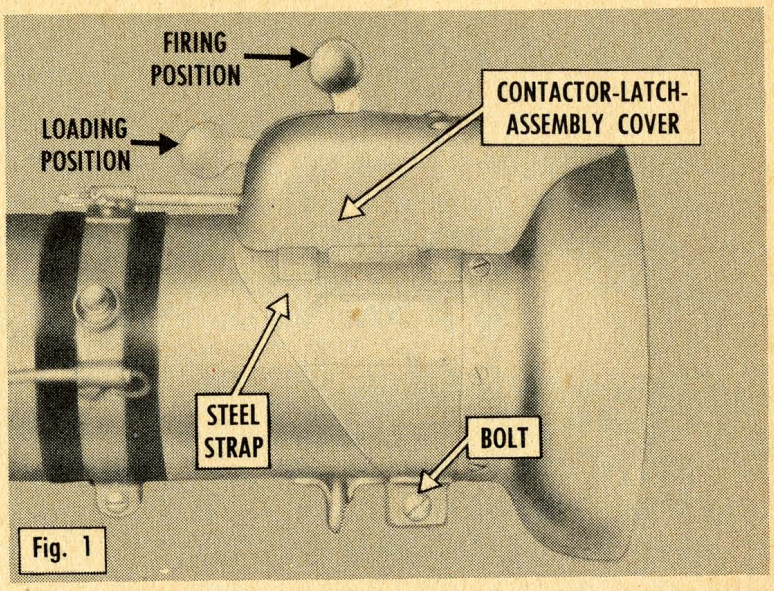


Fig. 1

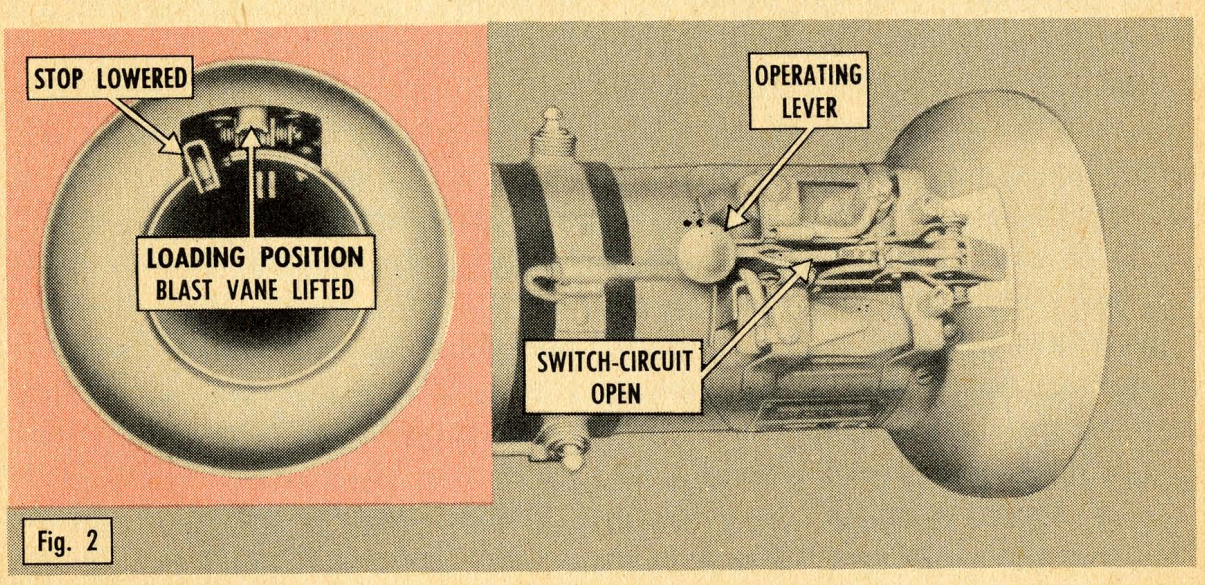


Fig. 2

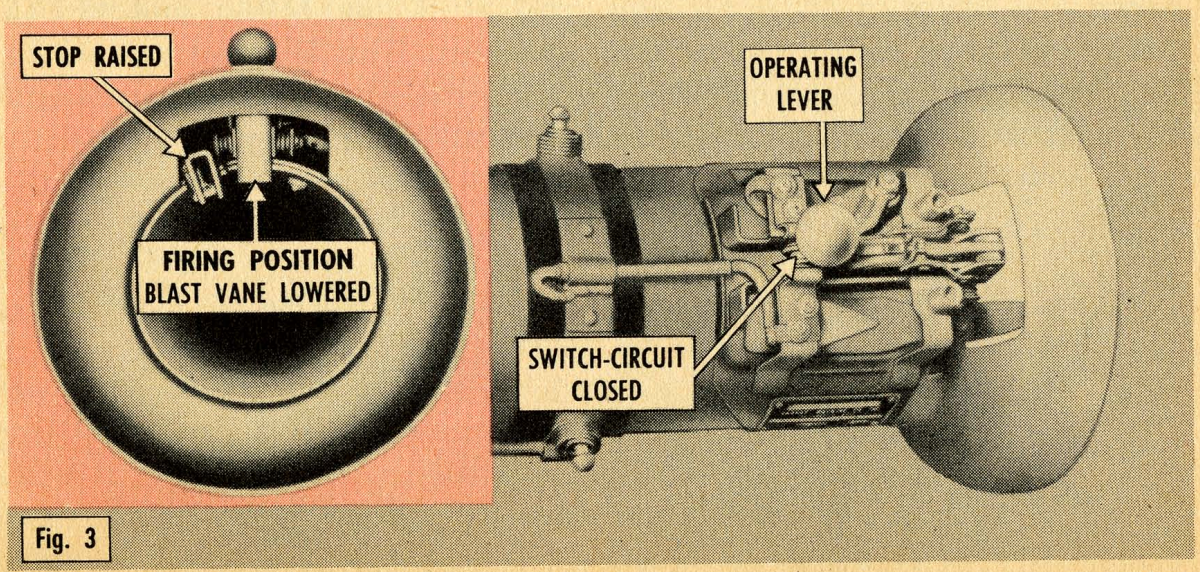


Fig. 3

the OLD *and the* NEW...
on RIFLE GRENADE LAUNCHERS

Some outfits already have the new launchers, and in time you'll get to trade in your old M7 or M7A1 for one of the modified models.

This is strictly for the M1 riflemen who have heard about but haven't yet met either the M7A2 or the M7A3 rifle-grenade-launchers.

Until you can claim one of the new launchers, best keep your M7 or M7A1 ready for action as usual—and above all else be sure to stash away a fresh supply of circular retainer—springs (Stock No. B39-731003) in your pocket.

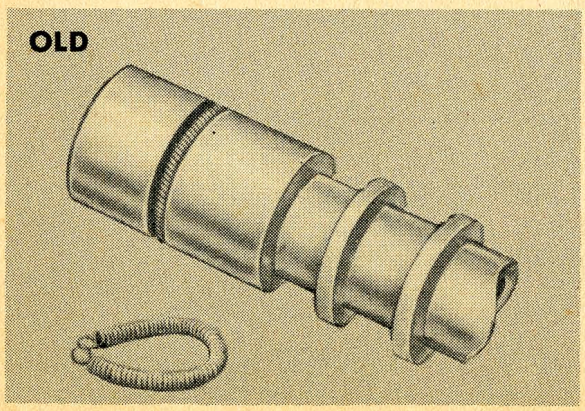
If it means tossing out your prized cheesecake collection, well toss away—those wire—coil retainer—springs wear fast. And once a spring gets weak from handling more than its share of grenades, or rusty from just plain sitting around, there's no profit keeping it about. It's likely to cause binding that'll cut down your range or else won't hold the grenade secure when it's supposed to.

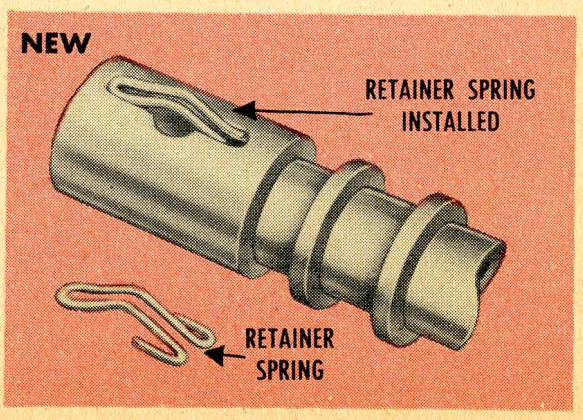
The results in either case could prove unpleasant—so on the old launchers check and change the retainer spring real regular.

Both the A2 and the A3 have a new—type retainer—spring that's a humdinger. It's a hairpin-type affair, approximately ½" long that's firmly entrenched in a slot in the front section of the tube. It's strong and long-wearing.

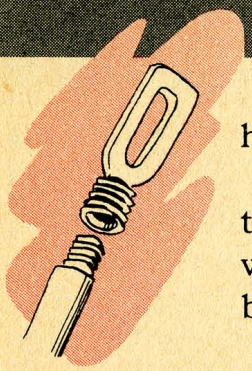
Also, the new launchers are about 1½" longer than the old launchers to accomodate more firing positions, so permit longer range. The A2 has seven firing positions, the A3 has ten.

When the A2 or the A3 come around to you, they'll take on the real stuff like M9A1 and M9A2 grenades. The M7 and the M7A1 will get retired to tamer games and used with practice ammo only.





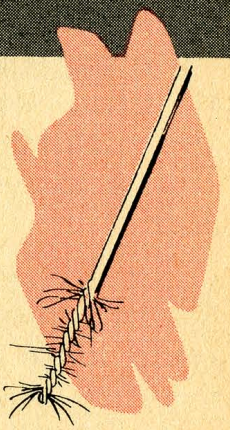
Cleaning Rod Tips



When cleaning rod tips get scarcer than hens' teeth, here's how to keep those M1 rifle bores clean and bright:

See if your ordnance maintenance outfit can manufacture a batch of tips from scrap brass for you. This has worked swell in Korea when the supply ran low in combat outfits.

Save the Bore Brush

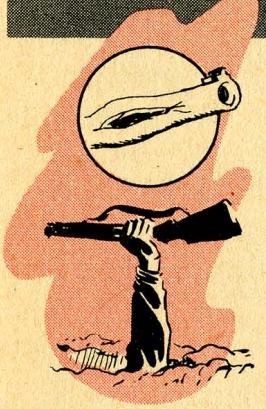


Your rifle bore brush will last a long, long time if you use it right. Be sure it goes all the way through the barrel before you pull it back.

If you stop part way down and pull her back, that bends the bristles back on themselves. They break and pretty soon you have a worn-out brush.

So—all the way down and all the way back.

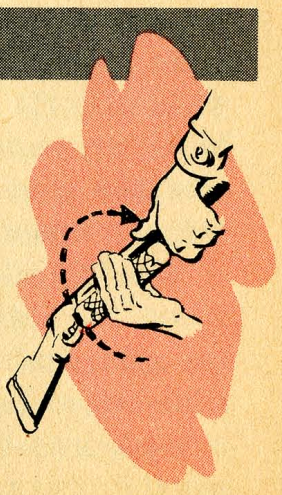
Short Man—Jammed Rifle



An M1 rifle, snow and a short man don't mix if he carries his rifle muzzle down while on guard or outpost duty. The muzzle dips in snow and gets clogged. The barrel may blow up on the first shot.

So, keep her muzzle up or to the front and take a quick look often to see that falling snow doesn't clutter up the bore. Of course, in deep snows even a tall man has to hold his M1 high.

Shotgun Magazine Turn



You may hit a snag while disassembling the take-down type 12-gage Winchester shotgun M97. The directions in TM 9-285 say to turn the magazine ¼-turn clockwise to get it free of the receiver.

This "clockwise" has confused many people. To keep from ripping out those interrupted threads on the magazine by heaving in the wrong direction—learn where to stand. You turn the magazine ¼-**turn clockwise** when you look from the muzzle end and counter-clockwise when you look at it from the breech end.

EXERCISING RECOIL MECHANISMS

Corporal C. F. wrote in recently and asked a $64 question:

"At a recent artillery demonstration I saw the gun crew use an M3 oil pump to exercise the recoil mechanism, or at least that's what it looked like they were doing. Is this trick effective?"

The answer is for everyone to read:

To begin with, Old Timers in the artillery business and people who really know the whys and wherefores of recoil mechanisms are really up a tree as to how anyone could effectively exercise recoil mechanisms with the M3 oil pump. They agree (like the corporal said) it must be a "trick."

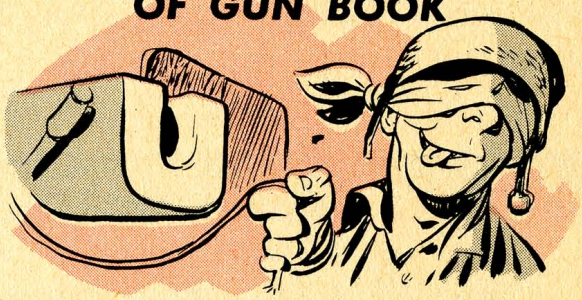
Working their heads vigorously from side to side, the experts say that merely attaching the M3 oil pump to the recoil fill-hole and pumping away will get you nothing more than an aching back and a lot more pressure on the recoil piston that'll tend to hold the gun **in** battery—and how does that exercise the gun's recoil parts, they want to know?

The M3 oil pump can be helpful when the job's done by elevating the gun, draining oil so the gun'll slide out of battery, then pumping it back into battery position—but, say the experts, is it worth the work and oil waste involved?

Fact is, the only for sure way they know of doing this job is to grab the nearest heavy vehicle, and a length of strong rope or cable. Attach the cable or rope to the tube and to the vehicle, and work the gun in and out of battery about three times. (See TB Ord 303.)

When last seen, the mystified experts were still shaking their heads and waiting for someone to prove to 'em that they're wrong.

WITHOUT BENEFIT OF GUN BOOK

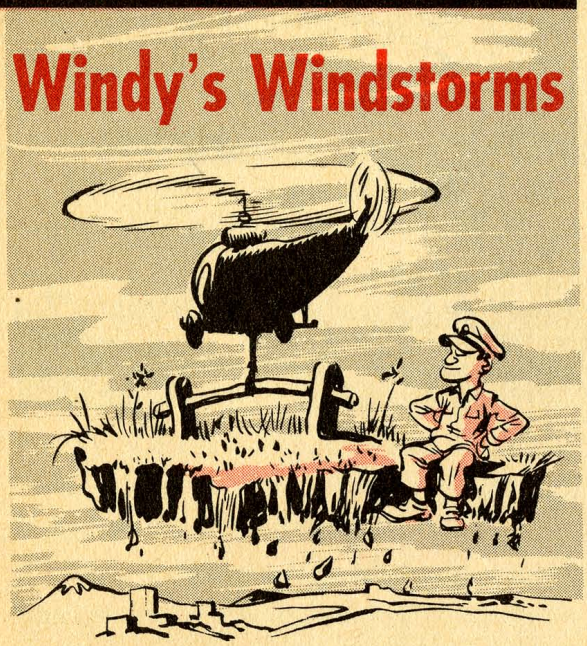


When your gun book takes it on the lam—as gun books have a habit of doing—a pullover gage is the only thing that can tell you whether or not your gun tube is long for this world. (Except on the old gun tubes in the M24 tank.)

So if you find yourself one day without benefit of gun book, better yell quick for a maintenance man to check your tube with a pullover gage before a lot of damage is done. Guessing games only pay off on radio and TV.

Then, so you won't need to do anymore yelling, requisition another book (00 Form 5825, FSN 28-F-67990).

ARMY AIRCRAFT



H-19C CARGO HOOKS

People who are using them beg to remind you that the cargo hook can be most embarrassing if you leave it down on landings or during low flight in general. They claim that the citizenry object to seeing their milk cow flying over the fence under your egg beater. In fact, they also object to seeing the fence flying over the cow. You can also get red ears from the pilot's heel if your cargo pack ends up in the local mayor's flowerbed.

H-19C PEDAL BRAKES

It seems that because the H-19C rudder-pedal toe-brakes are uncomfortably steep as issued, the boys have been applying a new and longer connecting link from the pedal to the cylinder, which sets the brake pedal down to a more comfortable angle.

H-19C TRANSMISSION DRIP PANS

I have seen some nice aluminum drip pans made to snap into place under the H-19C transmissions. They replace the square of soundproofing material immediately under the transmission and catch the inevitable oil drip. This keeps the oil from running down between the soundproofing and the shell.

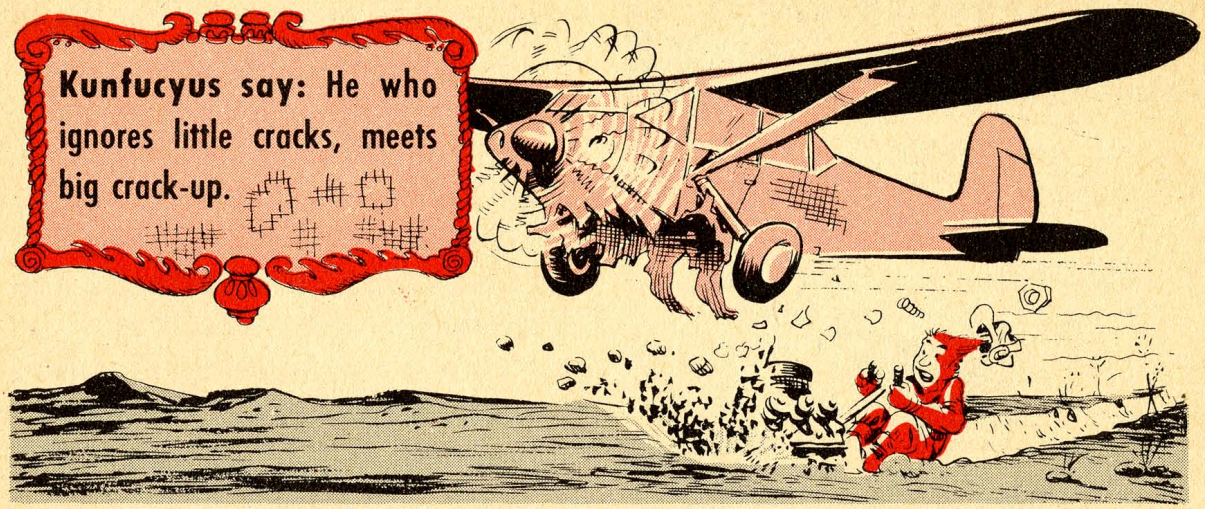
H-19C COOLING-FAN-SHROUD SPIDER

As I was shown when it happened, sawing the mounting ring of the cooling-fan-shroud spider in two places, between the mounting bolt holes, permits the spider to be removed for welding or replacement without removing the cooling fan. Cutting the new one the same way makes it easy to install and doesn't weaken the assembly enough to make a difference.

L-19 STARTER DRAIN

Those of you who have seen the "Starter-Drain Line" in PS #11 (page 496) and are just ahead of making one for your sky wagon, please to do a slow take on this gismo. It was (and is) a good idea, **but**—engines after #T-101211 have an internal drain built in at the factory. **Also,** every time an earlier engine is overhauled by Continental it is modified as it goes through the shop.

So best you pull your starter and have a look before you build the drain line for Continental engines below #T-101211.



letter from Germany:

L-19 Aircraft Failures

Dear Windy,

Here are some of the failures we keep encountering on the L-19 aircraft. I thought they might help others know what to look for in their inspections. Factory corrections, with serial number, are listed below.

The brake cylinder housing (Part No. 9511267) cracks where it is attached to the main landing-gear—generally from the mounting hole to the outside edge. A few have cracked across the outside face of the housing (Fig. 1). Housing thickness was increased starting with Army #53-2873, Cessna #22880.

The bulkhead assembly at Sta 228.687, (Part No. 0612127) cracks at the rivets where the flange mounts to the tail-cone assembly (Fig. 2). New tailwheel brakes start with Army #51-7393, Cessna #22132.

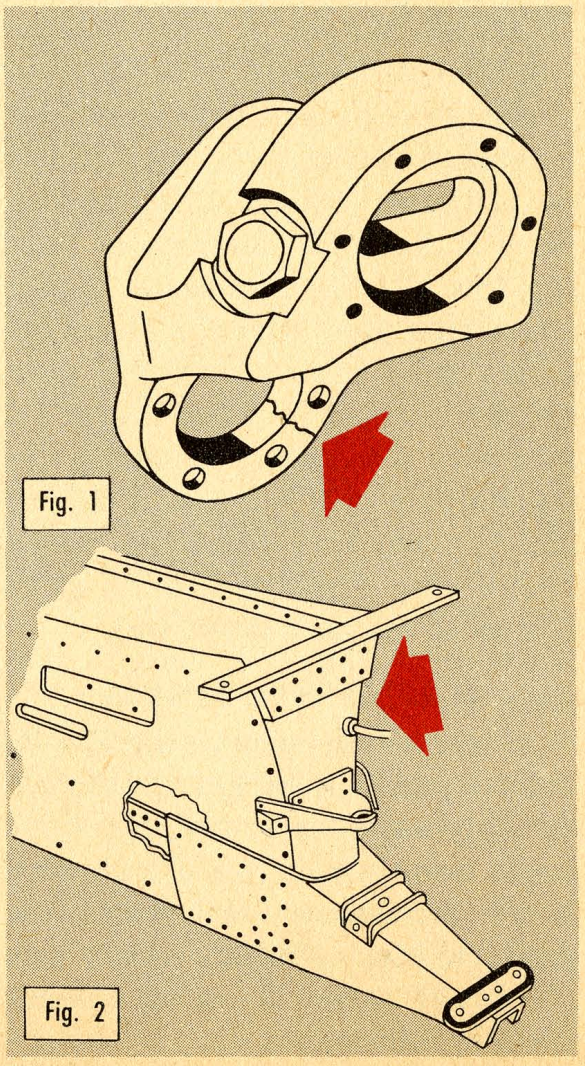


Fig. 1

Fig. 2

The control-tube assembly (Part No. 0660233-2) cracks at the base of the control-stick mount (Fig. 3). Gussets were added here on Army #51-12337, Cessna #22651 and following ships.

The wheel sub-assembly, inboard part (Part No. 511960-M-1) is cracking in the recess for the drive key, from the mounting hole to the edge of the wheel (Fig. 4). Brake retainers were adopted on Army #51-12186, Cessna #22500 —**don't pry** the old-type clips out with a screwdriver.

And I suggest that they check the control-stick adjustments to prevent undue strain on the materials (Fig. 5).

Checking on these little cracks may prevent a big crack-up, but you needn't worry about the later ships, look at your serial number.

Capt Robert A. Filby,
Germany

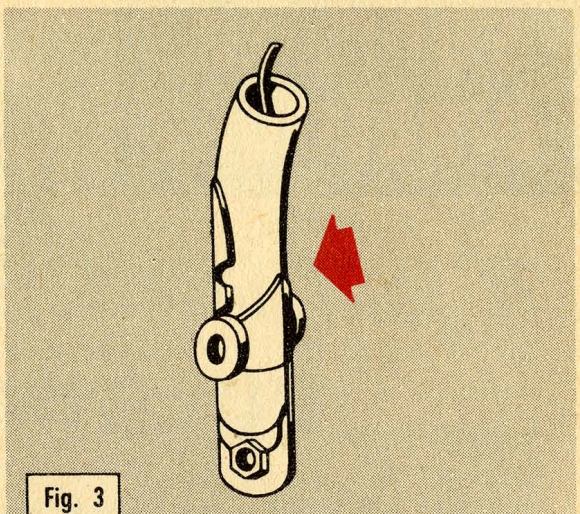


Fig. 3

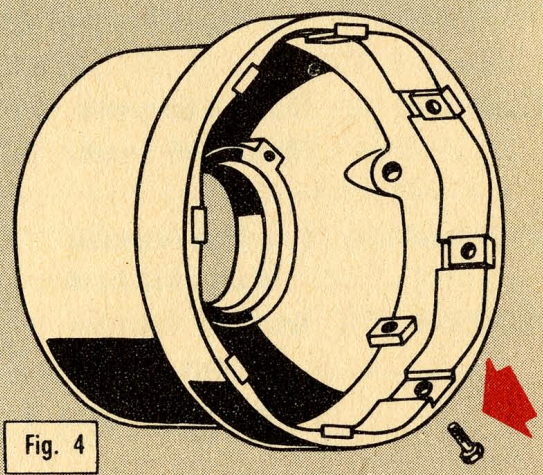


Fig. 4

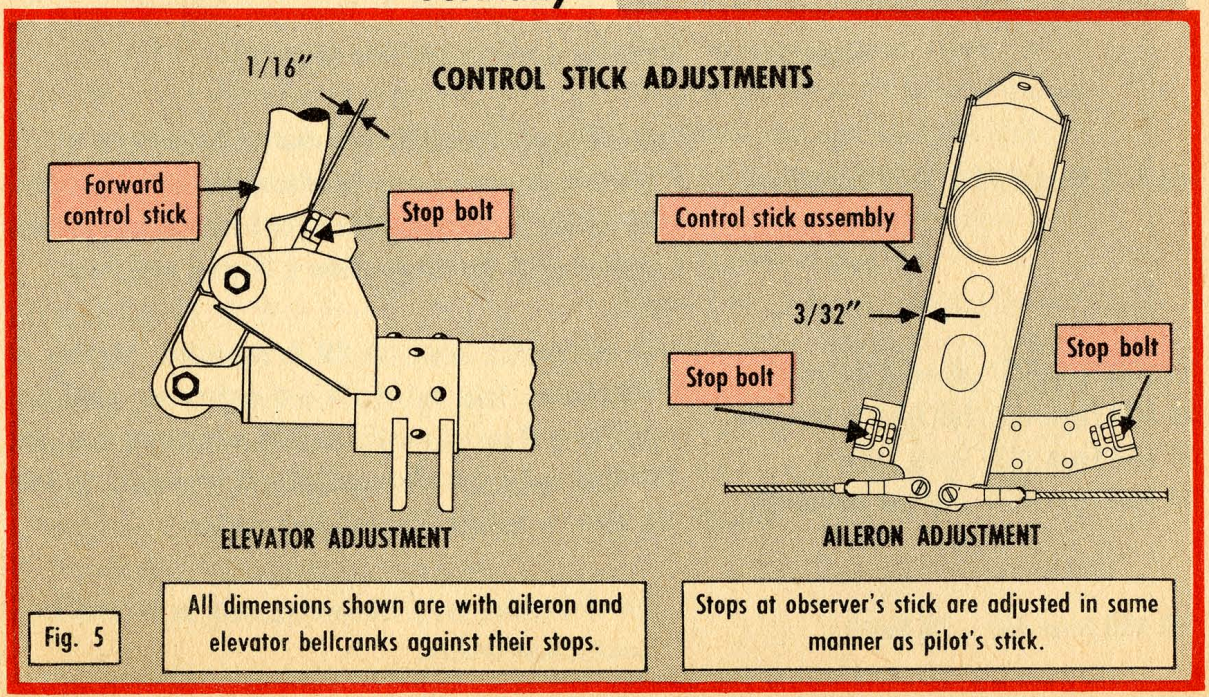
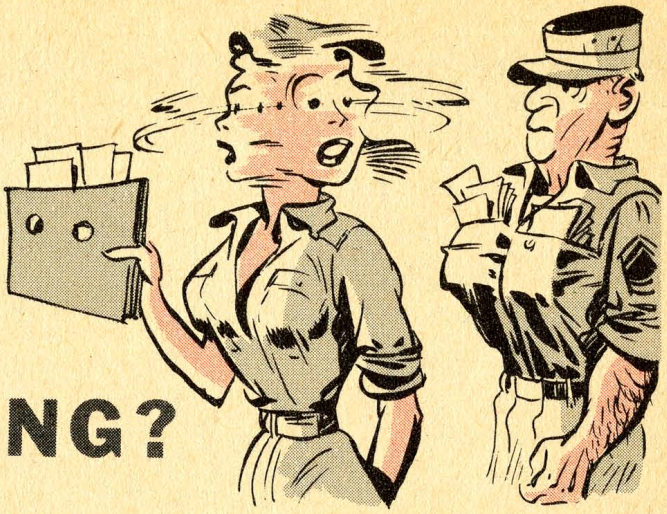


Fig. 5

SUPPLY & DIRECTIVES



Is your jacket BULGING?

Your WD AGO 478 jacket, that is. SR 345-250-90, section VI is just full of reducing ideas. Here's a quick run-down on disposal of PM forms for tactical vehicles. (TM 38-660 gives the dope on administrative vehicles.)

DD Form 110: Vehicle & Equipment Operational Record.	Remove from files and destroy when next 60 days or 1000 miles services have been done.
DA AGO Form 9-68: Spot Check Inspection Wheel & Half Track DA AGO Form 9-69: Spot Check Inspection Full track & Tank-like wheel vehicle.	Cut off at the end of each month, hold 1 month in current file, then destroy.
WD AGO Form 13-1: Automotive Disability Report.	Cut off 30 June and 31 December, hold in current file another 6 months and then destroy.
WD AGO Form 9-75: Daily Dispatching Record.	Cut off every 2 months, hold another 2 months in current file, then destroy—except on vehicles that were in accident. All records on accident vehicles you'll have to hold in some safe place till the claims officer is through with them.
DA AGO Form 461: Wheel & Half-track DA AGO Form 462: Full Track & Tank-like DA AGO Form 463: Motor Cycles DA AGO Form 464: Engineer Equipment	Or comparable forms for PM & inspection. 60 days or 1000 miles: Take out of file and destroy on completion and filing of next 6 months or 6000 mile record. 6 months or 6000 miles: Cut off at end of each calendar year, hold 2 years in current files and then destroy.
WD AGO Form 460: PM Roster.	Cut off 30 June and 31 December, hold in current files 6 months, then destroy.

Manuals On Commercial-Type Vehicles and Machine Tools

You won't get what you want by writing to manufacturers of commercial-type vehicles for manuals—they can't help you a bit. Write to Office Chief of Ordnance, Attn: ORDFM-Pub, and they'll OK your request (depending on your justification). Using units, with only 1st and 2nd-echelon maintenance to worry with, won't be able to get a shop manual—and shops won't get the driver's manual. Whatever you do, don't try to get a manual for each of the vehicles you have—you can do with less and they just aren't that plentiful. You'll save yourself a lot of time if you remember these pointers.

When it comes to power tools, Office Chief of Ordnance, Attn: ORDFM-Pub can usually get manuals off to you pronto. Give them the data off the data plate, along with your request for each manual. And no use asking for whole sets of manuals. They take a dim view of multiple requests because most folks don't have so many different kinds of power tools.

Contact for Air is CG, Warner Robins Air Materiel Area; Robins AFB, Georgia; Attn: WRSCD (Class 50F). Contact for Navy is Chief, Bureau of Yards and Docks, Department of the Navy; Washington 25, D.C.; Attn: Code B740.

Limited Storage and PM Rosters

Dear Half-Mast,

As acting Motor Sergeant I'd like to ask: Are vehicles in limited storage supposed to be shown on your PM Roster?

Sgt H. C. K.

Dear Sgt H. C. K.,

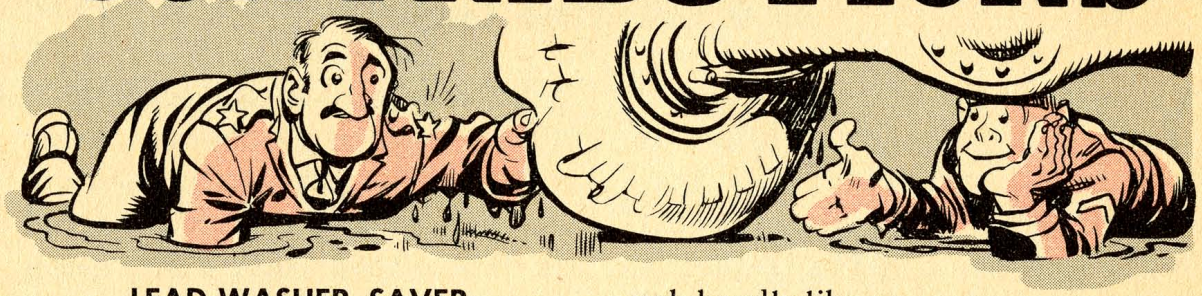
The answer is Yes—if the vehicles being put in limited storage are to remain the responsibility of your unit. Any equipment on your property book has gotta show up on your Preventive Maintenance Roster.

But that doesn't mean you keep giving it regular PM services in limited storage. Your roster will show its final services before going into limited storage and the date it went in. The only other entry on that line will be the services it gets when it comes out of LS.

SB 9-4 (9 June 52) says there'll be a monthly inspection given vehicles in storage—you might want to show these on your PM Roster, too. That'd be a matter for you to decide.

Half-Mast

CONTRIBUTIONS



LEAD-WASHER SAVER

Dear Editor,

We have worked out a gimmick in our Battalion motor pool and thought it might help someone else with similar troubles.

The idea has to do with the lead washers under the heads of the reflector bolts on the M100 ¼-ton trailer. We take out the bolts and put a steel washer on top of the lead one. This will prevent the constant tightening of bolts from pulling the bolt head through the lead washer.

MSgt Swain
Fort Sill, Oklahoma

AIR TANKS

Dear Editor,

Most drivers know the brake air-tanks on the 2½-ton 6x6 trucks, M135 and M211, should always be bled after the vehicle has been in operation. Condensed air in these tanks rusts their insides if it stays in there and, in cold weather, will freeze and damage the tanks.

But getting down under and turning the pet-cock handle is a finger-tip buster—it's easier to develop a bad memory and just forget this little chore entirely. So, to avoid this, I've extended the pet-cock handle like so:

Put a 3″ bolt thru the hole in the pet-cock, with a washer and nut on each side to hold it snug (Fig. 1). Paint the bolt red so it can be easily seen.

Try this one for size—should improve your first echelon PM on these vehicles.

Louis A. Ruggiero
Newark, New Jersey

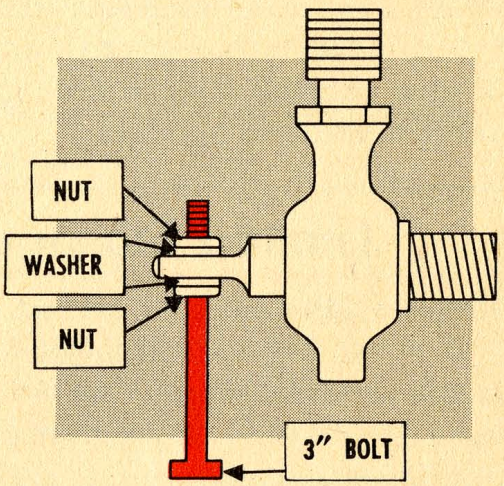


Fig. 1—Longer handle saves fingertips—and encourages good PM on brake air-tanks.

(Ed Note—If you had naught but highway driving to deal with your idea might be desireable, but since this bolt will likely snag itself on rough ground, it might be best to keep some kind of a pin handy in your cab for this purpose. Fixing it all stationary like this might cause trouble. It might get snagged into the open position or, if you did break

it off, might break the valve, too—then you'd really be in the soup.)

WW II OIL SEALS

Dear Editor,

When we can't get the I-beam or banjo-type-axle inner-front oil seals for our WW II GMC's, we use the split-type axle inner-front-hub seal. We push this felt seal onto the knuckle the same as the regular seal. Then we use the split-type-axle oil-seal retainer and assemble the unit as usual. We've operated a vehicle for almost 5000 miles on all kinds of terrain without a leak.

MSgt Paul A. Mabe
APO 301, San Francisco

PM KEEPS YOU MOBILE

Dear Editor,

Some people think we don't have time for Preventive Maintenance up front here in Korea but believe me they're wrong—dead wrong. Our Ord Bn is supposed to be semi-mobile, and we're close enough to some of the hot spots to make it healthy to keep that way. Our mobility—maybe even our skins, and a lot of other hard-to-get equipment—depends on good PM.

It'd make you cry to see how far-reaching one man's neglect can be. Here's one good example of many, many stories I could tell you.

We moved in right behind our fighting men to a new area the Commies had just been driven out of. No telling how long we could stay—there'd been a lot of see-sawing. Our mobility was mighty important.

The trek northward was a chilly one and getting chillier all the while. An Autocar truck-tractor and trailer, loaded to the gills with supplies and equipment to set up the new area, jogged a water hose loose and lost all its water **and** anti-freeze. It was easy to pull aside and replace the water (thru the ice in a rice paddy). OK up to that point.

What the driver didn't do was report the loss of his anti-freeze to the motor officer when he reached the new area. He just made a mental note to do that later.

Later turned out to be a week. It took that long to set things up to the point where supplies could be unloaded from the trailer. Then, by strange happenstance, the truck tractor **couldn't** be moved. A surprised driver reported to the motor officer—just couldn't imagine what was wrong with his vehicle!

One look under the hood changed all that—icicles everywhere, cracked head and all. And to make a short story shorter, there wasn't an Auto car head to be had in all Korea. In due time one came along from stateside and that equipment was rolling again—only a few months. How do I know? I'm the motor officer.

Lt Dorsey E. West
Korea

LOOSE HAMMER HEADS

Dear Editor,

Some 1# and 2# copper hammers (Stock Nos. 41-H-265 and 41-H-267, respectively) have been loosing their

heads lately (we approach our small-arms repairman with caution, lest we get clobbered by a flying copper-head).

Seems the design of the handles on some of these hammers doesn't match the hammer-eye too well, and vice versa —and the wedge that's used doesn't expand the handle enough to keep the head where it belongs. (Slight projections at each end of the eye are the only parts that come in contact with the handle.)

Defective hammers in use can be made trustworthy by filing the eye to a uniform diameter of 13/16" and putting in a handle that really fits tight.

O. G. Tonrac
APG, Maryland

(Ed Note—Your fix is good, but you won't be dodging copper-heads much longer any way. Both of these items are on the way out—fact is, No. 41-H-267 has already been replaced in supply by Hammer 41-H-269 and when present supply of 41-H-265 is exhausted it's to be replaced by Hammer 41-H-485-315.)

wrong number, operator
(and a whole peck of new ones)

Hope you haven't clobbered that comely supply clerk yet. Some of PS's enthusiasm about the new 24/6-volt conversion kits might have rubbed off on you. The stock numbers given were so shiny-bright new when this item went to press that two of them got mixed up in the glare. On others, the blessed event was still in the offing.

So now, all can be told. Take pen in hand and turn to page 501 of your copy of PS #11. (Page 500 stays as is.)

Items #5 and #9 best be forgotten till PS can get more dope on them. Change Item #6 to Stock No. G221-5701834 (for Trailer, 2-ton, 4-wh, generator M7 and M18; Director M13 and M14; and Semi-trailer, 5-ton, 2-wh, refrigerator van).

Item #7 gets the Stock No. G213-5701833 (for 4-ton, 2-wh, ammo M21).

Add Stock No. G216-5701835 to Item #8 (for Trailer, 8-ton, 4-wh, ammo M23).

The M10, Trailer, 2-ton, 2-wh, ammo, can be added to the list, with Kit, Stock No. C059-8365125.

In the little box in the lower right-hand corner of the page: The stock number of the Electric-Brake Control Kit listed for the M34 2½-ton 6x6 is not a waterproof kit. It'll work like PS said, but now there have been some big changes. One Waterproof, Electric-Brake-Control Kit **(Stock No. G742-5701909)** will take care of any air-braked 24-volt vehicle, 2½-tons and up.

In the kit you'll find, among other things, an extra length of wire and some special tape. These let you adapt the kit to your particular vehicle— in some cases you'll snip off the extra leads, sometimes you'll make 'em longer, sometimes you'll assemble as is. But this kit will take care of your needs.

These changes will bring you right up to snuff on this kit story.

you ask for a puzzle —you get a puzzle

PS Double-Crosser

HOW TO DO IT

The diagram squares spell out a familiar saying. The word definitions were taken from information in this issue of PS Magazine—unless it's something you know well enough to answer in your sleep. When you find the word to fit the definition, write it in the blank spaces provided. Each space has a number—a corresponding number appears in the diagram below. So when you find a word, transfer the letters to the matching numbered squares. In no time at all, you'll solve the familiar saying.

WORD DEFINITIONS

A) Necessary condition of reflector bolts on M100 trailer that can damage lead washers

_ _ _ _ _
31 10 20 60 2

B) Not a coward, but to Company's credit if always ready to run (2 words)

_ _ _ _ _ _ _ _ _
5 36 8 54 41 27 58 39 43

C) Period of time—half of which is limit for a mileage worksheet

_ _ _ _
61 21 40 16

D) Draftees were never assigned to this branch of the service (Abbrev.)

_ _ _
57 9 42

E) To place gun in firing position on target

_ _ _
6 52 28

F) Where M2 Browning might fire if headspace isn't properly adjusted (2 words)

_ _ _ _ _
15 24 44 19 63

G) What some tomatoes you've dated had half of

_ _ _
29 1 37

H) Valve controlling delivery of what explodes in vehicle's combustion chamber

_ _ _ _ _ _ _ _
17 32 3 62 56 50 7 38

I) Designating maintenance information in book form for combat or transport vehicles

_ _
18 33

J) Phase of offensive operation when boresighting, zeroing-in and first-round hits pay off

_ _ _ _ _ _
48 12 22 34 47 53

K) Describing condition of truck engine when it's perking fine (2 words)

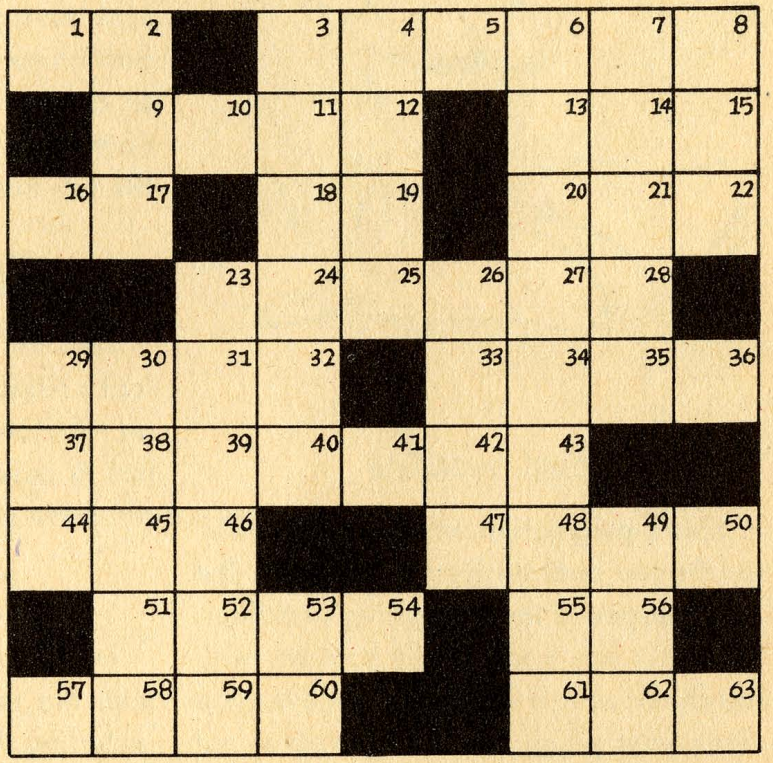
_ _ _ _ _ _
25 49 59 46 11 4

L) What she should have had instead of half of word G

_ _
30 51

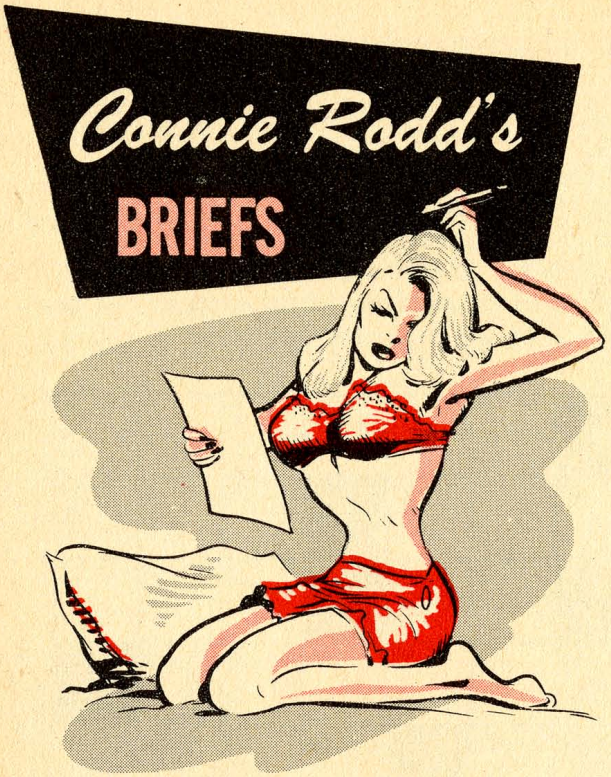
M) Definite task, duty or assignment given to an individual or unit in a military action

_ _ _ _ _ _ _
14 35 23 13 55 45 26



Solution to Double-Crosser in PS #13

P	M	■	I	S	■	A	■
C	O	M	M	A	N	D	■
■	R	E	S	P	O	N	S
I	B	I	L	I	T	Y	■
■	B	U	T	■	I	T	■
I	S	■	E	V	E	R	Y
O	N	E	S	■	■	B	U
S	I	N	E	S	S	■	■



Cut cables

Spark-plug cables on the 3/4-ton M37 get frayed and cut from rubbing on the sharp edges of the lifting-ring and filter. Now that you know it can happen, why not check your lines? And whenever you clean your plugs, route those cables out of harm's way.

Production change

Those of you who have read the suggestion for clamping your M35 2½ ton's air compressor line to the manifold and putting a length of hose over your starter cable (PS #12, page 514) but haven't done it yet, be sure to look and see if your hoopy has been changed in production, or by MWO. If you find a couple of clamps holding this air line and the battery cable, don't worry about a fix—the job has been done for you.

Spark plug size

That 44-mm spark plug for the M135 that's listed on page 159, TM 9-819A is an obvious typographical error. But, just in case . . . it's a 14-mm plug that does the job.

Tire rotation

In case of these trucks with trailers with the same size tires — how about including the trailer tires in the rotation. Smart, hm-m-m?

CAUTION CAL. .50 MACHINE GUNNERS...

Before you stick this decal caution-label (DA Label 19) on your modified Cal. .50 M2 HB Browning machine gun like it says in MWO Ord A39-W13, Change 1 and MWO Ord A59-W2, Change 1, grab your pen or borrow a typewriter and right along in here add the following: **Change 4 (16 June 52) par IIc.**

CAUTION

THIS MACHINE GUN MODIFIED

Before attempting to adjust headspace, refer to FM23-65

DA LABEL 19
1 FEB 53

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of PS Magazine

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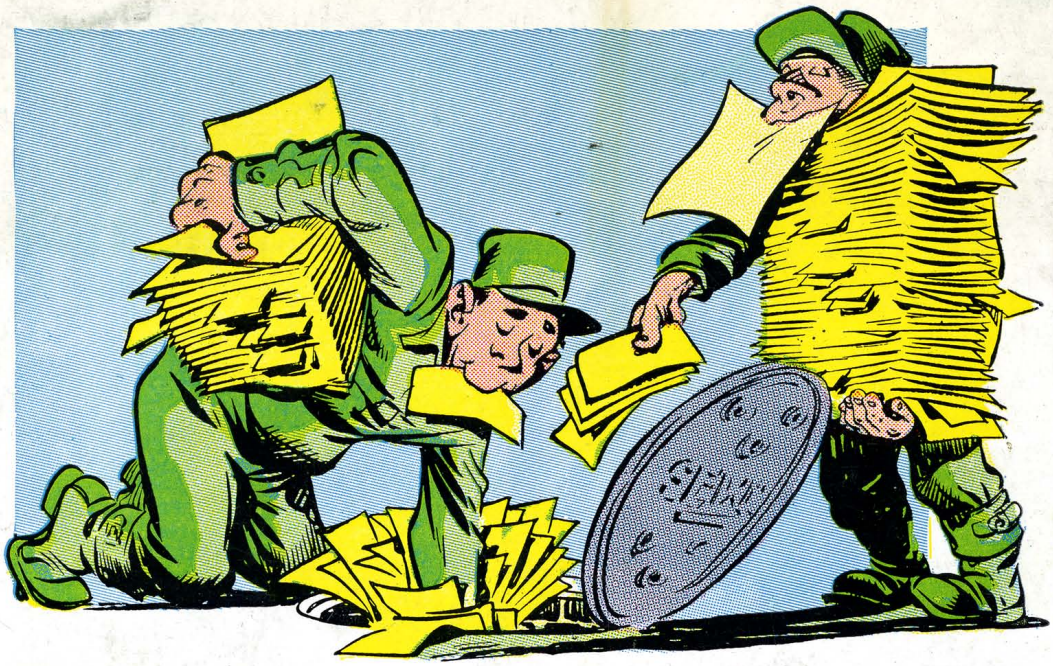
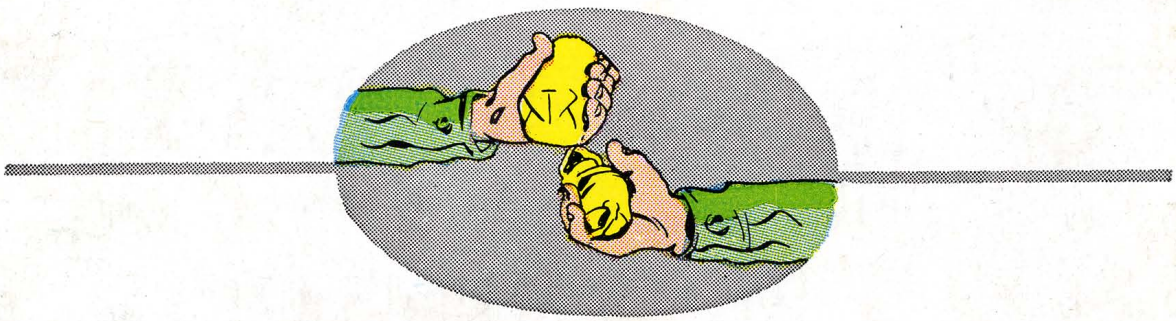
2C—INSIDE FRONT COVER; 3C—INSIDE BACK COVER; 4C—OUTSIDE BACK COVER

... you can take the paper work and SHOVE IT!



Ordnance management, like any good business management, believes the customer is always right. Ordnance wants to minimize your paperwork and give you more time to maintain your equipment. That's the way it's been for a long, long time under the regulations, but not enough customers seem to know it. Everybody should know it. (See 8-page ad in color, page 682.) Ordnance wants to minimize the paperwork. ***You take care of the equipment.***



DIRECT EXCHANGE